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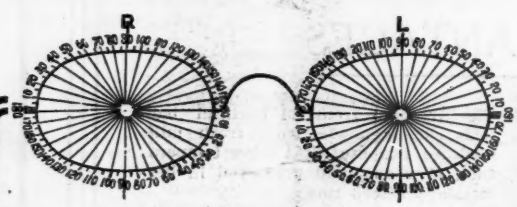

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THE MEDICAL JOURNAL OF AUSTRALIA.

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NOTES FROM THE No. 2 CASUALTY CLEARING STATION.

By H. S. Stacy, M.D., M.S. (Syd.),
Lieutenant-Colonel, A.A.M.C.

Mobilized in Melbourne the first week in October, 1915, and containing on our staff representatives of every State, with the exception of Queensland, we left Australia on various transports during November, the bulk going by H.M.A.T. ——— on November 23, 1915.

The following comprised the staff of officers: Lieutenant-Colonel H. S. Stacy, Officer-in-Command, and Captain A. J. Collins, both of New South Wales; Major J. W. Browne, from South Australia; Major W. S. Sweet, from West Australia; Captain E. M. Allester, from Tasmania; and Captains R. F. Craig and J. V. Pearce, from Victoria. Lieutenant T. de C. Armstrong, a brother of Dr. W. G. Armstrong, of New South Wales Public Health Department, was also included on staff for duty as Quartermaster. Attached to the unit we also have a dentist (Lieutenant W. M. Amphlett) and three Chaplains—Captain F. T. Cleverdon (Methodist), Captain G. H. Tucker (Church of England), Captain H. A. Clarke (Roman Catholic).

The rank and file were drawn mostly from Victoria, but some of the men were specially enlisted in New South Wales, because of special qualifications, such as operating-theatre experience, splint-making and X-ray work. Between mobilization and departure the time was occupied in giving the men experience of surgical dressing, etc., at the Alfred, Melbourne and St. Vincent Hospitals. The afternoons were either occupied with stretcher drill or route marches, and the evenings with occasional lectures.

Through the generosity of the Red Cross Society, we were enabled to obtain many invaluable additions to our equipment, for example, a Wile's field cooker, an X-ray plant, a 5 h.p. oil engine and dynamo, the raw material for making the iron skeleton splints of Robert Jones and others, also many much-needed surgical instruments, and a machine for simple and quick manufacture of aerated drinks.

Whilst in camp, Corporal Alderton (who holds the position of Engineer at the Children's Hospital, Sydney) made models of the Jones's splints. Some of these were left behind for the workers of the Melbourne Branch of the Red Cross Society to copy and send on after us. Dr. Wade, of Sydney, promised to instruct the Sydney Red Cross workers. Our X-ray worker (Private Jones), whom I specially enlisted in Sydney, had had a long experience of electrical and X-ray work, but, on his arrival in Melbourne, I found, to my dismay, that he had an inguinal hernia of long standing. However, inside thirty-six hours we had him operated on in the Melbourne Hospital, and sixteen days later he sailed with us on the ———. Our sergeant of nursing duties (Bennett) was also specially enlisted. For six years he was in one of the Prince Alfred operating-theatres, and for the last year or two in charge of Allen & Hanbury's surgical instrument department. Amongst the Melbourne privates was a man named McMurdie, who proved an adept in the repair and sharpening of surgical instruments, and also in the splint-making. As we had, in addition, a fifth-year medical student, we had at least some good material to leaven the unit.

We all reassembled in Egypt about the middle of December, and were put into Zeitoun Details Camp, just outside Cairo, for nearly a week; then we proceeded, on Christmas Eve, by train to Ismailia, arriving there on Christmas Day. Though some of us afterwards saw many parts of Egypt, we found no town to approach it in beauty, and yet, at the time of the opening of the Canal, it was just a sandy waste on the shores of Lake Timsah. The French had had the foresight to plant beautiful trees, and to water them liberally.

Just about this time the Australian and New Zealand troops were returning from Gallipoli; our unit was therefore split up, in order to provide a Clearing Station at Tel-El-Kebir, where most of the troops were going. After three weeks in Ismailia our main section was moved across the Canal on to the desert, near by, at a spot called Ferry Post. Here, after several weeks, our other section joined us. Gradually the battalions belonging to the 2nd Division took up positions beyond us in the Arabian Desert, the front line of trenches being about eight miles from the Canal and extending north and south. The 5th, 6th and 7th Field Ambulances cleared to us, and, if the men were not likely to be able to return to their lines within two weeks, we cleared to No. 1 Australian Stationary Hospital, Ismailia. The Stationary Hospital, in their turn, sent suitable cases to one of the General Hospitals in Cairo. For part of the time a special hospital-train ran daily. The majority of the cases were medical, such as dysentery, laryngitis, paratyphoid fever and the like.

Our camp at Ferry Post attracted some attention from the General Staff. A short description of a few of its features may be of interest.

We soon learnt that, in Egypt, sanitation was far and away the most important feature demanding the attention of the Medical Staff. We were provided with an Indian pattern incinerator, in shape square, open top, iron bars for floors, and vent-holes underneath and at the sides. This may prove satisfactory in India, but it left much to be desired in Egypt; possibly because the Indian native can be relied upon to attend to them properly, whereas the Egyptian rarely has the brains to be relied upon for anything. We added a pyramidal top to it, made of galvanized iron, surmounted by a chimney, in

this way improving the draught; but, later, we abandoned it altogether in favour of the Grayson two-pit incinerator. Grayson, I understand, is a New South Wales shire engineer, and is at present serving with the A.I.F. It consisted of digging two cylindrical pits in the ground, one as a draught chamber, the other as a fire chamber. The two are about three feet to four feet apart, and are connected by a tunnel at the bottom; into this tunnel we fitted two oil-drums end to end, with the bottoms cut. The depth of the fire chamber should be three or four times that of its width; about two feet from the bottom, iron bars were put across, not too closely. Instead of having the draught chamber cylindrical we had it in the form of a ramp or drive, for ease in digging and for convenience in removing the ashes. The chambers in our case were about eleven feet deep; this is comparatively shallow. At Tel-El-Kebir they were made about 24 feet deep. As an accessory, we placed on the surface, near the top of the fire chamber, a long wooden box on an incline; the smoke and hot air from the incinerator helped to dry the refuse from the wards, kitchen, etc., which was placed in it. At intervals the attendant would rake it down into the incinerator. The draught obtained in this pattern of incinerator is excellent, and for a few days all went well; but our trouble then began. The ashes could be raked out from underneath the fire-grating through the tunnel, but stoking the fire to prevent it choking was a difficulty. We then drove another tunnel in, just above the grating, for the purpose of stoking, and from that time we had no further trouble. Everything in the camp in the shape of refuse, fæces, etc., was incinerated; it was highly efficient and absolutely inoffensive. In order to separate the urine from the fæces, we designed a special latrine bucket, made out of a kerosene tin. About four inches from the bottom was inserted a perforated false bottom, and to this lower chamber was fixed a funnel, to allow the urine to be poured off. Thus, in the upper chamber, the fæces were more or less dry. Reverting to the incinerator, in the deeper types of this model the heat is so intense that bottles are melted anl tins are pulverized. Of course, the climate of Egypt, with its comparative absence of rain, is very suited for this type, but I see no reason why a covering, with a side trap-door, could not be placed over the pit, and thus make it suitable for all climates. As so many of the infections in Egypt are fly-borne, it is essential to destroy their breeding-grounds, such as manure, etc., and there is no easier or more efficient manner of doing this than in a deep Grayson incinerator. Even the Indian Medical Service men were forced to admit this and to recognize its great merits. Unfortunately, when Colonel Hunter (of Serbian Barrell fame) and Colonel Balfour visited our camp, it was only just under construction; but they saw enough to appreciate the value of it. Of course, like all incinerators, it is not fool-proof, and I found it advisable to keep the same man in attendance on it as far as possible; but this applies to other good incinerators as well.

Our travelling field cooker, manufactured and designed by Wiles, of Ballarat, excited a lot of attention. It was the first of its kind in Egypt, and, as it is constructed to cook for 500 men (on the march, if necessary), giving a plentiful supply of hot water, using only 150 lbs. of coal a day, or a corresponding amount of wood, its value is apparent. It has an oven for roasting; all else is done by steam. Inserting a steam hose-pipe into a dixie of cold water will boil it in under two minutes. The Australian papers have recorded recently that 70 of these cookers have been ordered by the Australian Government.

By means of our oil engine and dynamo we were enabled to light the whole camp electrically; in the wards, in addition to the fixed lights, we had moveable ones, specially encased, and with long leads, to take them to the bedside. It also furnished the current for the X-ray apparatus, for which we had a special tent, lined with a layer of red, then black, cloth. The X-ray apparatus was simply invaluable to us; the class of work done was very high.

Amongst the gifts from the Red Cross Society was a machine for readily making soda-water and other aerated drinks. On the Egyptian desert, particularly when the weather became warm, these were much appreciated by both patients and men; the latter were charged a small sum for them. In that way we were able to raise some hundreds of piastres, which were spent partly in securing a few comforts for the men, and partly in a concert given by our unit and the 7th Field Engineers.

At the suggestion of our dispensers we put our serums in a case and inserted it in the ground in the dispensary tent; the temperature of this box remained practically constant at 62° F.; on many occasions the temperature of the tent was over 30° higher. This useful dodge we afterwards applied to the boxes of Australian butter, which the Comforts Fund were good enough to give to us. In this way it was used to the last ounce, lasting six weeks or so, whereas, under ordinary conditions, it would have become rancid in about a week.

Instead of having our stretchers on the ground, we rested the head end on a long plank supported by sandbags. At the foot end we had the sandbags for each stretcher. In this way access was left between the stretchers; at the same time patients lay at a convenient height for examination.

All kinds of devices were used against the flies. The best, we found, were the sodium arsenite solution and the mixture of resin and castor oil, spread over a piece of suspended bandage; but in spite of everything they were innumerable.

Our workshop, in which the splints and numerous other odds-and-ends were made, was always a source of interest, and one of the most valuable features of the camp.

On one occasion we were honoured with a visit from General Sir Archibald Murray (Commander-in-Chief), accompanied by Sir Henry McMahon (High Commissioner for Egypt), General Sir Alexander Godley, Surgeon-General Bedford, Lady McMahon, the Comtesse de Serionne and others. Several weeks after this visit the Commander-in-Chief, whilst on his way to the front trenches with the Egyptian Minister for War, got off the train, in

order to show him a few of the prominent features of our camp.

Other less welcome visitors during a few days of March and April were the Khamseens—strong south-westerly winds from the desert, raising clouds of dust, which penetrate everywhere.

During April, hot days and flies were upon us, so that it was with great satisfaction we heard of our orders to pack up for France. On April 20, 1916, we entrained for Alexandria, and on the 21st embarked on a Hospital Ship, together with two British Casualty Clearing Stations. On the way over to Marseilles, several of their men developed relapsing fever, in consequence of which we were quarantined for two weeks; but, as the camp site was a most delightful one, amidst beautiful trees, and overlooking the bay, our lot was not a hard one. Only those who have been in Egypt for many months can appreciate the beautiful greenness of France.

At the end of our quarantine period we travelled north between five and six hundred miles to a British base, where we camped within the lines of the No. 1 Australian General Hospital. Here we met many old friends. After a few days' sight-seeing in this most historic of towns, we proceeded to look around the hospitals in the vicinity. Of these, there were many, the total accommodation being 15,000, I am told; but they are far from full, as all cases which are not likely to be fit for Convalescent Depôt or active service in three weeks are sent on to England.

The No. 1 Australian General Hospital is doing good work; but, to their disappointment, are not getting many Australians. These are evacuated to a base hospital further north. Their officers tell us that the class of British "Tommy" here is ten times as good as that they got in Egypt after Suvla Bay, but that they think the Australian has even more grit. The staff are busy for a few days after a convoy of wounded come in, and then things are quiet until the next.

Hearing that Captain Max Page, R.A.M.C., was on the staff of No. 8 General, we paid a visit, and spent an interesting hour or two looking at fracture cases, of which they seemed to get a number. His modification of bed-knee splints, which we had brought along with us from Australia, seemed to be giving great satisfaction.

We spent a most instructive morning at No. 5 British General Hospital. Here Captain Roberts, R.A.M.C., took us round, and explained the principles of their treatment of septic wounds. It was really originated by Colonel Gray, of Aberdeen, and is known as the salt-pack treatment. It consists in opening the wound widely, making a conical-shaped incision of the septic tissues, with the base outwards. Into the wound thus made, a fair-sized piece of gauze, soaked in normal saline solution, is gently packed, so that it comes into contact with every portion of the wound. On this gauze are laid about four or five 40-grm. sodium chloride tablets. Over these is laid another piece of moist gauze; on this sodium chloride tablets are placed; the moist gauze repeated, and so on. The number of tablets used depends upon the size of the wound, and may be anything from twenty to forty. Over the gauze is placed cotton wool, and this is firmly bandaged, so that the gauze may be kept in close contact with the wound. The dressing is then left alone for five days, provided the temperature and pulse-rate are not increasing. For the first twenty-four hours the dressing, even to the bandage, is moist; after that it remains dry. There is no need to change even the outer dressing all this time; in fact, it is a disadvantage, since you risk disturbing the pack. At the end of the fifth day, the pack is removed under an anæsthetic. The dressings by this time have an offensive smell, but much less so since the addition of chloramine between the layers of gauze. The wound, however, generally has a healthy appearance. The process is then repeated as often as necessary. As a rule, the first and second dressings are done under an anæsthetic, with some morphine to relieve the pain that follows during the first hour. After the first hour the patients lie perfectly comfortably. During the first four or five days it is not uncommon to see the temperature of 101° and a pulse-rate of 110 or 120; but, provided there is not a progressive increase, no notice is taken.

As regards the conical excision of the wound, I gather that this is advised where the skin wound is a small one. This class of case seems particularly apt to develope gas gangrene. For this infection all the affected tissues are widely excised, even to the extent of a whole muscle, if necessary. In addition, multiple incisions are made. One usually recognizes it by the brawny appearance of the part, and the crepitation to the touch. Sometimes the crepitant feel may not be very evident, if the gas gangrene affects more particularly the deeper tissues; but when these are cut into, on pressing the part, one will see small gas bubbles exuded. In a post-mortem examination that I saw, in practically every organ that was examined these gas bubbles could be seen. They seemed to find gas gangrene in the gluteal region very fatal, particularly in the early days of the war. Even now the results seem more unfavourable in that, compared with other regions, in spite of wide excisions. I suggested that it might be due to an intra-pelvic spread. It is found that one of the most reliable indications as to whether a case of gas gangrene is improving or otherwise is the presence of pain. Acute pain generally means extension of the process, and means amputation.

In this hospital the use of peroxide of hydrogen for gas gangrene or other septic infections has been abandoned for the last seven months. I may mention that, with the exception of iodine for the skin, they have used no antiseptic for the last twelve months. Needless to say, this statement gave us somewhat of a shock, with our pre-war ideas of the necessity of antiseptics.

A very great advantage of the salt-pack is the infrequency of the dressings. This naturally means a tremendous saving of time to the staff and of pain to the patient. At one hospital they relate that, after Loos, they were operating for ten days from 10 a.m. to 3 a.m., with an interval for meals. They point out that it would have been impossible for

them to have done the work with the old system of frequent change of dressings. With them, foments are almost unknown. Continuous irrigation is very rare; an occasional bath may be given to a limb. They admit the value of ensol; but claim it gives no better results, and involves much more frequent dressings.

For compound fractures the salt-pack treatment is also used with the same happy results. Occasionally they have had an opportunity of trying it in ordinary surgical infections of civil life, *e.g.*, carbuncle, with the same success as in military surgery. At this hospital they prefer not to crush the saline tablet into powder. If the wound is down on to a large vessel they do not care even to have a saline tablet too close to it, in case its hardness may cause erosion of the vessel. For this reason drainage tubes are tabooed in this class of case, as well as most others. The abandonment of the drainage tube was another shock to me, even though I could readily see how its use in a wound near a joint might easily cause erosion of the capsule and thus joint infection.

Gas Gangrene.

Of this there appears to be five varieties, some of which are not malignant and would yield to any rational treatment.

(1) A variety in which there is the usual crepitation, and a condition of bronzed œdema around the wound and up the limb. This is not malignant. The local excision of the affected tissue is all that is needed.

(2) A variety in which the limb is white and brawny and there is solid œdema. This is serious, and indicates amputation high up; but even this sometimes fails.

(3) Another variety, in which there are the usual gas signs in the vicinity of the wound; but, in addition, a stealthy infection along the sheaths of the vessels. For this, high amputation is necessary.

(4) Cases that may develope early (one is recorded even twelve hours after infliction of the wound), and that are characterized by pallor, collapse, vomiting, hiccough, etc., and jaundice. These are nearly always fatal, whatever is done.

(5) The last variety, in which most of the tissues of the limb are mushy and gaseous.

From what I have seen at the Base Hospital, the innocent cases seem to predominate. It is curious that, even though a case is doing well, when the pus from the wound is bacteriologically examined, gas organisms are found. I may mention that, even though the patients may have had no signs of tetanus, yet the tetanus germ is also not infrequently found in the pus. To my surprise I learn that there is an anaerobic variety of streptococcus, and also of the *bacillus coli*, and of the staphylococcus.

Joint Wounds.

The majority of these wounds were in the knee joints. All were treated on Thomas's bed-knee splint, with slight but not strong extension. In these the practice is to excise the track completely, from skin down to the synovial membrane; to extract the foreign body, if present; to irrigate the joint with saline solution; to close the joint wound; to put a small pack down to the outside of the joint; and to inject a 2% solution of formalin and glycerine. For a wound of the knee 25 c.cm., and for one of the elbow and other joints less, are used. Only in one case had ether been similarly used. The results in all were excellent.

If effusion of the joint should occur, it is aspirated, and formalin and glycerine re-injected. Needless to say, the limb is put on a splint, but no attempt is made at extension.

The results I saw of this treatment were excellent. One surgeon's method for cases in which a knee joint is hopelessly septic, is to expose it thoroughly by cutting the patellar ligament, dissecting away the synovial membrane. The joint is put up in a splint in acute flexion. The ends of the splint protrude beyond the tibial and femoral surfaces. In about two weeks the semilunar cartilages come away; and in about three weeks the articular cartilages. About a week later, if the granulations on the bone are healthy, he puts the joint up, under an anæsthetic, perfectly straight. I am told that in this way he has saved limbs that otherwise would have been amputated. Regarding amputations in general, they are rare operations nowadays at base hospitals.

Head Injuries.

Since the introduction of the steel helmet, four or five months ago, cases of head injuries are being received in increasing numbers at the base hospital. The reason is that injuries which formerly proved fatal are now considerably modified. About 27% to 37% of those that arrive at the base are accompanied by fracture of one or both tables of the bones of the skull. The method of treating them consists first of all in taking a radiograph, in both antero-posterior and lateral planes, noting any irregularity in either the outer or inner table of the skull and in localizing a foreign body, if present. The radiographs naturally vary in value. Sometimes they display clearly a fracture of the inner table, which otherwise would not have been diagnosed. At other times they are unsatisfactory, and fail to give the desired information. In some cases the localization of a foreign body is so accurate that the surgeon is enabled to insert a cataract knife into the brain, almost at once on to the foreign body, and to extract it with forceps with very little trauma. Unfortunately, this is not always so. In two cases that I saw on the one morning at No. 10 General Hospital, the surgeon was able to find and remove several small pieces of bone that had been driven into the disintegrated and hæmorrhagic brain substance, and to remove much of the blood clot, but the foreign body eluded him, in spite of the fact that lacerated brain substance was extracted at the time of the operation. When seen several days later the patients did not seem much the worse for it. In each of these two cases a small drainage tube was inserted down to the edge of the brain cavity, partly to drain off the remaining blood clot, and partly in the hope that the foreign body might come out through it.

In head cases where the *dura mater* has been opened, and the brain explored, lumbar puncture and the removal of four or five drachms of fluid may be performed to relieve excessive headache as a result of increased cranial tension. It is, however, usually avoided during the first four or five days, and, I think, wisely so, as, by it, one runs a real risk of causing a general meningitis before adhesions have formed. In one case I heard of, in which an ounce and a half was withdrawn, the temperature rose to 105° within a short time, and the patient died of septic meningitis.

As four or five days usually elapse before patients reach the base, most scalp wounds are apt to be septic. This sepsis involves the underlying pericranium and bone, if fractured. The universal treatment here is to make an ecliptical incision around the wound, through the pericranium, to the bone, removing it entirely, exposing the area thoroughly by retracting the surrounding pericranium. The skull is trephined near the fracture, and then the fractured and depressed portions are removed. This may expose an underlying extra-dural clot. If there is reason to think that there is sub-dural mischief, from the absence of pulsation, etc., a crucial incision is made in the *dura*, and, if blood clot is present, it is evacuated. A flap is rarely made in the scalp, the wide excision of the wound, and a Y-shaped modification of the resultant wound is always sufficient.

Some surgeons do a complete operation under a local anæsthetic (novocaine and adrenalin), using one to two ounces of this. Others, again, may use a little adrenalin locally, and give a general anæsthetic. It is certainly surprising with how little discomfort the operation can be done under a local anæsthesia. All the head work that I saw at No. 10 General was done in this way. Much of it was done by Lieutenant Shepherd, R.A.M.C. His position is known as Surgical Specialist, and he does a large proportion of the operative work. Above him is Captain Hepburn, whose position is that of chief of the surgical side, and is largely administrative and consultative.

In the British Hospitals, civilian surgeons nowadays do a great deal of the surgical and medical work. The regulars do most of the administration. Early in the war, as was natural, there was a little feeling; this has now completely disappeared.

Foreign Bodies.

These consist largely of pieces of shrapnel, shell casing, etc. The ideal place for removing these seems to be at a Casualty Clearing Station. It is usually but a matter of searching the depth of the wound and extracting the piece of metal, and with it very often particles of clothing. The clothing, if left, is the most frequent source of infection, whilst the metal, if not removed for some days, may be difficult to extract through the wound, as the deeper positions of the sinus may have closed. It is in these cases that accurate localization with X-rays is of such great value.

By means of the direct localization method, as described by Captain Edwards (Sydney), of No. 10 General Hospital, in Major Hull's book on war surgery, foreign bodies can be located with great accuracy. I understand that it even better than the Mackenzie Davidson method.

In addition to Captain Edwards, there is another Sydney graduate (Captain Nye, R.A.M.C.) on the staff of No. 10 General Hospital.

Wounds.

If the wound extends right through the limb, the conical-shaped excision of the track is made on both sides. The apices are towards the middle. Naturally, wide excision of wounds leave a large, gaping surface, which might appear as an argument against it; but, after about the third dressing, the wounds that I saw were ready to be drawn together, either by strapping or by actual suture. There is no necessity to wait for a granulating surface; they will heal before this appears. A contra-indication to bringing the skin edges together is the presence of surrounding redness and œdema. In one that I saw the walls of the wound bulged slightly beyond the skin surface. This should not be so, and was due to an insufficiently wide excision of the infected tissue. The treatment for this would be a more frequent change of dressing or a further excision.

Tetanus.

Only one case of this has come to No. 5 General since November, 1914, and in this one it was doubtful if the usual anti-tetanic serum had been given on the infliction of the wound. Captain Roberts, who was at Boulogne during the early months, when tetanus was so rife, said that they had found that the subcutaneous injection of 25 c.cm. of a 2% solution of carbolic acid three time a day gave 50% of recoveries, even including the bad cases. It was significant that the spasms recurred if the treatment was interrupted. No carboluria ever ensued.

Whilst at this base word came through that Lieutenant-Colonel McLean, of the No. 1 Australian General Hospital, had been awarded the D.S.O. The news caused much satisfaction.

ON THE TRANSMISSION OF AUSTRALIAN DENGUE BY THE MOSQUITO STEGOMYIA FASCIATA.

By **J. Burton Cleland, M.D., Ch.M. (Syd.),**
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At the end of March, 1916, information appeared in the lay press that the epidemic of dengue, which had been raging in Queensland, had extended to some of the North Coast towns of New South Wales, and that in Murwillumbah in particular the incidence of the disease was very great.

The Minister for Public Health and the Director-General of Public Health (Dr. Paton) considered it advisable that the ætiology of the disease should be investigated as far as possible, in the hope that meas-

ures might be devised for controlling future outbreaks of this mild, but temporarily incapacitating, disease. This suggestion was welcomed by the officers associated with the Microbiological Laboratory of the Department, more especially because it was recognized that, if infective material could be transmitted to Sydney, experiments might be there conducted, without any fallacy arising from the contemporaneous incidence of local cases of the disease, Sydney having hitherto been free from indigenous cases. Experiments, however carefully conducted, in or near the locality in which the disease is prevalent, always lead to the criticism that apparent experimental conveyance of the disease by one or other means may really have been instances of the disease naturally contracted. As compared, therefore, with workers in Syria, in Brisbane, and in the Philippine Islands, workers in Sydney had a great advantage.

The experiments detailed in this article represent only a portion of a number of other experiments carried out with material connected with cases of dengue fever, and comprise only that portion dealing with attempts at conveying the disease by means of the bites of naturally infected mosquitoes.

Our full observations on the disease, with complete details of all the various experiments performed, and with a review of various aspects of its ætiology, will be the subject of a later report.

The proof, as shown by our experiments, that the yellow fever mosquito, *Stegomyia fasciata*, transmits dengue, being so important from the point of view of preventing the spread of this disease, has induced us to make known at this stage the results of these experiments.

Previous Work Bearing on the Experimental Production of Dengue Fever by Mosquitoes.

Graham (1903) reported experiments which are generally regarded as showing that *Culex fatigans* is able to convey the infection of dengue fever. In his experiments, four men slept under mosquito bars containing mosquitoes which had bitten dengue patients. Three cases of dengue resulted, four, five and six days after the first biting. The other case was unsuccessful. These experiments were conducted in a dengue district, and, to obviate the possibility of other means of infection in the infected district, he took mosquitoes to a mountain village where no cases of the disease had occurred and similarly infected there two persons, with incubation periods of four and five days respectively.

He admits that in many, perhaps in all, of his experiments, *Stegomyia fasciata* were present amongst his mosquitoes. He seems, therefore, to us at most to have proved that mosquitoes can carry the disease, the variety or varieties remaining in doubt.

Graham gives also, but without convincing detail, the history of a case injected with the salivary gland of a *Culex*, which had fed on a dengue patient 27 days previously. He says the patient "had a chill on third day and high fever, and an attack resembling in every way that of dengue, but so strong that I desisted from further experiments in that line." "That this was not septicæmia was proved by the finding of numerous dengue parasites in the blood." The second sentence suggests a doubt as to the diagnosis, and the finding of the "dengue parasites," which Graham discovered in his dengue cases, but which were probably artefacts, cannot be regarded as proof as to the nature of the disease.

It is interesting to note Graham's remarks as to the distribution of *Culex fatigans* and *Stegomyia fasciata*. These appear to have been both plentifully present in Beyrouth, but on the higher parts *C. fatigans* was the principal mosquito, whilst in some villages there were few or no mosquitoes at all. As far as we can gather from his paper, the distribution of the dengue fever may have corresponded closer with the *Stegomyia* distribution than with the *Culex* distribution, but he has not analysed this point.

Bancroft's (1905) results were no doubt vitiated to some extent by the fact that he was working in an infected district. This may operate in two ways. Firstly, his apparently successful cases might have acquired the disease in some other fashion, and, secondly, his failures might be due to the cases experimented with having passed through mild attacks of the disease previously. He had two apparently successful cases, the subjects of which were bitten by *S. fasciata* twelve and ten days after these had bitten dengue patients, whilst in the failures the persons were bitten fifteen, fifteen and seventeen days after the mosquitoes had fed on individuals suffering from dengue. His experiments cannot be regarded as in any way conclusive, but are highly suggestive, and one is inclined to wonder that they have apparently not been repeated since. He notes that persons living in the country (non-infected districts ?), visiting town friends with dengue in the day-time, acquired the disease, and deduces from this that if dengue is a mosquito-borne disease, *Stegomyia fasciata*, which is diurnal in biting habits, may be an efficient agent in the transmission.

Ashburn and Craig (1907) report one successful case in nine persons bitten by *Culex fatigans*. They regard three of these cases as not fair experiments, as proved later by unsuccessful intravenous injections of dengue blood, and another because he had possibly previously had the disease; the other three subsequently developed mild attacks of dengue on inoculation. One person was not bitten by the mosquitoes. The mosquitoes used had been reared in captivity, and then fed on dengue cases. In the successful case the subject was exposed under nets on September 12, 1906, to the bites of *Culex fatigans*, which had bitten a patient with dengue on September 11, 1916, but he was not bitten until the night of September 13, and developed no symptoms until the night of September 17. His temperature, however, rose on the 16th, nearly 24 hours before. The incubation period would be from 3½ to somewhat over 4 days. The symptoms appeared to be fairly typical, and there was a slight rash on the abdomen and chest.

It is to be noted that the chart of this case shows the temperature to have been over normal from the 13th September. This tendency to be above normal may be noticed in several of the other charts

of injected cases shown by these authors as occurring well before the onset of the fever.

The successful case was probably one of dengue, but arguing on analogy with yellow fever, the very short mosquito "ripening" period (less than 2 days) would make one accept it with reserve as originating from the mosquitoes. One cannot certainly exclude the possibility of there being other sources of infection. Failing other evidence, the case is undoubtedly very suggestive of the possibility of Culex being a vector of dengue, but we can hardly understand the importance attributed to this isolated case by most text-books.

In the present article we deal exclusively with experiments conducted after the conclusion of a preliminary investigation. The results of this investigation were related to the members of the Pathological Club on April 19, 1916. The experiments and observations forming the basis of the communication were tentative, and had the object rather of guiding us in our subsequent researches than of establishing any definite facts. The account of our remarks at this meeting, published in *The Medical Journal of Australia*, of May 6, 1916, does not convey this impression, and the reader is led to suppose that the work was planned deliberately. That the report had this effect is demonstrated by the criticism contained in the leading article in the same issue, which was obviously written on the assumption that our observations were on experiments planned with the object of determining the mode of infection and the length of the incubation period of dengue fever.

First Series of Mosquito Experiments.

Our first series of mosquito experiments will not be referred to in detail in this paper. Four persons were bitten by *Stegomyia* and two by *Culex*. Negative results were obtained. There was, however, a very large mortality in the mosquitoes collected, and the bitings, except of one individual, who received ten bites, were unsatisfactory. These negative results will be fully displayed and analysed in a fuller contribution appearing later. The deductions and conclusions in the present paper refer to our successful second series.

Second Series: Results of Experiments with Mosquitoes, Stegomyia and Culex.

In our second series of experiments mosquitoes were collected in Mullumbimby and the surrounding district, about 100 *Stegomyia* and 112 *Culex fatigans* being thus obtained. The insects were collected from the hotel at which we stayed at Mullumbimby, from the post office, and from private houses in the town and district in which dengue fever cases had occurred, in some cases from the actual bedroom where patients were lying sick with the disease. A few mosquitoes were caught on the journey from Brisbane to Mullumbimby.

Occasional *Culex annulirostris* were found in Mullumbimby, and on our journey, but are not included in the above, and, with the exception noted in our *C. fatigans* results, were not used in our experiments.

The *Stegomyia fasciata* and *Culex fatigans* mosquitoes were transferred to special cages, one containing *Stegomyia fasciata*, the other *Culex fatigans*. The cages were made with a rounded opening, to which was attached a net sleeve. Through this the hand could be passed to add freshly caught mosquitoes and for the biting experiments.

At Mullumbimby, on May 8, 1916, a dengue patient (X.), who became ill on May 7, 1916, was bitten by the *Stegomyia* mosquitoes then in the cage; on May 9, 1916, he was again bitten by *Stegomyia*, and on the evening of May 8, 1916, he was bitten by the *Culex* mosquitoes. Both types of mosquitoes bit this patient well, and thus many of the Mullumbimby district mosquitoes had certainly been fed on the blood of a dengue case in the acute stage. Exactly how many mosquitoes bit this patient it is impossible to say, as this part of the work was conducted in a badly-lit bedroom.

On May 11, 1916, these mosquitoes arrived in Sydney.

Biting experiments by the *Stegomyia* were conducted on May 11, May 12, May 13, and May 14, 1916, and by the *Culex* on May 11, May 12, May 13, and May 14, 1916, as shown more clearly later.

On May 15, 1916, some 7 *Culex* and 11 *Stegomyia* collected in the Grafton district, chiefly from houses of dengue patients, were added. Over 112 mosquitoes were collected in Grafton, of the following species: *Stegomyia fasciata*, 27; *Culex fatigans*, 46; *Culex annulirostris*, 37; *Nyssorhynchus annulipes*, 2. But although all care was taken, the mortality between Grafton and Sydney was large, and hence only this small number was added to the boxes.

Further feeding experiments were made with the remaining mixed Mullumbimby and Grafton mosquitoes, *viz.*, with *Stegomyia fasciata* on May 15, May 16, May 17, May 18, May 19, and May 23, 1916; and with *Culex fatigans* on May 15, and May 16, 1916.

On June 29, 1916, the cages used in the experiments were emptied of the dead mosquitoes, and the remaining bodies that were not crushed up were examined separately with a hand lens. Seventy-five *Stegomyia* were counted (two being males) in the *Stegomyia* cage; no other mosquitoes were found in this cage. Seventy-eight *Culex fatigans* (two being males) and 1 *Culex annulirostris* were found in the *Culex* cage.

This procedure forms an additional check by another observer (J.B.C.) that the classification of mosquitoes was made accurately by B.B., and although about 25 *Stegomyia* were unaccounted for—probably they had been unrecognizably crushed in travelling, etc.—we can be reasonably certain that no *Culex* mosquitoes were included in the *Stegomyia* cage with which we obtained our positive results.

Summary of Experiments.

The following is a short summary of the experiments made and results obtained with the mosquitoes, taking the nine persons volunteering *seriatim*:—

Case I.—J.G., male, laboratory assistant (18 years), the subject of an unsuccessful *Stegomyia* biting experiment of the first series, was bitten on May 11, 1916, at 2.15 p.m., by some 28 *Stegomyia* mosquitoes. He remained well until the afternoon of May 19, 1916, 8 days later, when he noticed he had headache. That evening, at 7 p.m. (8 days and 5 hours) he was again bitten by *Stegomyia*, and, while sitting

with his hand in the cage, first became definitely ill. He passed through a typical attack of dengue fever, showing a double temperature curve, rash, and symptoms described in detail below. Blood from this case reproduced the disease on injection. Result positive.

Case II.—McD., male, laboratory assistant, not previously the subject of experiment, was bitten on May 12, 1916, by 10 *Stegomyia* and on May 18, 1916, by 3 or 4 *Stegomyia*. He remained well until June 3, 1916, 17 days from the second biting and 22 days from the first biting, when he had an influenzal attack with coryza for a few days, with no rash and nothing suggestive of dengue. Result negative.

Case III.—G., male, laboratory assistant, not previously the subject of experiments, bitten by about 9 *Stegomyia* on May 13, 1916, and by about 3 *Stegomyia* on May 17, 1916. No symptoms have followed these bitings to date—July 14, 1916. Result negative.

Case IV.—Wm., male, laboratory assistant, not previously the subject of experiment, was bitten by about 36 *Stegomyia* on May 14, 1916 (mid-day), and by about 36 *Stegomyia* on May 15, 1916 (12.30 p.m. and 4.30 p.m.). On May 20, 1916 (6 days and 9 hours from first biting), whilst going to bed at night, he became ill and had a typical attack of dengue, with double temperature, rash and other symptoms detailed below. His blood on injection reproduced the disease. Result positive.

Case V.—M., female, a nurse, was bitten by 18 *Stegomyia* on May 16, 1916 (noon) and became ill on May 25, 1916, 10 p.m. (9 days and 10 hours later), and passed through a rather severe type of dengue, with very marked rash and double temperature. No blood was taken from this case for injection experiments. Result positive.

Case VI.—B.B., medical practitioner, was in dengue fever districts—Mullumbimby, Casino and Grafton—leaving Grafton for Sydney by boat on May 13, 1916. To keep the mixed Grafton mosquitoes alive, he allowed them to bite him on May 12, 1916, and May 14, 1916, but remained perfectly well till, on May 23, 1916 (2 p.m.), 10 days after leaving the dengue district, he was bitten by 15 *Stegomyia*. He remained quite well till May 29, 1916, and the temperature normal till May 31, 1916, on rising, 9 a.m., 7 days and 19 hours, when he became definitely ill and passed through a severe attack of dengue, with definite prodromal and secondary rashes, double temperature, and marked joint pains, etc., as described below. Blood from this case reproduced the disease on injection. Result positive, but open to criticism as having been in a dengue district 18 days before the attack developed.

Case VII.—W.T., bitten by one *Stegomyia* on May 12, 1916. No illness followed. Result negative.

Case VIII.—M., a patient at a hospital, was bitten on May 11, 1916, by about 12 *Culex fatigans*, and on May 12, 1916, and May 13, 1916, by an unknown number of *Culex fatigans*, and on May 14, 1916, by at least 20 *Culex fatigans*. Result negative.

Case IX.—J.O.S., laboratory assistant, a subject of *Culex* experiment in first series, was bitten on May 15, 1916, by 6 *Culex fatigans*, on May 16, 1916, by 2 *Culex fatigans* and on May 18, 1916, by — *Culex fatigans*. No symptoms followed. Result negative.

Detailed Histories of the Four Successful Cases.

Case I.—J.G., æt. 18, male, laboratory assistant. Not previously in a dengue district. Subject of unsuccessful biting experiments (*Stegomyia*) on April 8, 1916, April 11, 1916, and April 12, 1916.

May 11, 1916.—Bitten by some 28 *Stegomyia fasciata* at 2.15 pm..

May 19, 1916.—Quite well in morning. He felt a slight headache first in the afternoon. He came into town at about 7 p.m., to be bitten by mosquitoes, and while sitting with his hand in the cage noticed a feeling of heat and that his headache was worse. He went to lecture after this, and had to go out of the room and go home. He had no evening meal, and went to bed feeling shivery and hot at the same time, and spent a restless night. No vomiting occurred. Incubation period: 8 days 5 hours.

May 20, 1916.—He came into work. One of us (B.B.) saw that he was ill, and that he had a typical dengue face, swollen, hot, and purplish in colour. The headache was bad in the frontal region. His eyes felt as if they were "being pulled," and hurt somewhat to move. There was pain in neck, and abdominal pains early in the morning. A weak feeling, as in influenza, but no definite pains, were complained of elsewhere. There was no coryza, but the eyes were injected. Anorexia was marked, but no nausea complained of. The tongue was furred, creamy at back, and the tip typically strawberry. There were three motions since rising. Temperature: 101° at 9 a.m., 101.5° at 11 a.m. (see chart). Pulse-rate: 105. We noted an indefinite subcuticular mottling. Blood was taken for injection experiments. The Wassermann test was negative. The patient was sent home too ill to work.

May 21, 1916.—Stopped at home.

May 22, 1916.—He came into town. There was doubtful mottling on the back and forearms. The tongue was still furred, with strawberry tip and edge. His legs were very painful. We took blood for injection experiment. The patient said that he felt "pretty well." Blood examination: Leucocytes, 6,400; polymorphonuclears, 78%; mononuclears, 22% (100 cells counted). No parasites were found in blood.

May 23, 1916.—Temperature, 7 a.m., 102.2°. He felt worse, the head and eyes were bad. There was an indefinite mottled rash on the chest, arms and back, not very definite. Temperature, 4 p.m., 101.4°; pulse-rate, 120. The face was flushed, and he looked sick. No obvious coryza was noted.

May 24, 1916.—The temperature at 7.30 a.m. was 99.2°. The head was not aching, and eyes were better. The back was stiff on waking and on bending. He felt fairly well. A definite, slight, mottled rash was seen on the back, lumbar region, and abdomen. It may be described as "midway between measles and scarlet fever, only much less marked."

After this the patient was well, and continued to work as usual.

One c.cm. of the blood was taken from this patient on May 20, 1916, and a volunteer (H.K.) was injected on May 24, 1916, and became ill eight days later (June 1, 1916, mid-day), and had a typical attack of dengue, with double temperature curve, typical symptoms and slow pulse.

One c.cm. of the blood was also taken from this patient on May 22, 1916, and was injected into a volunteer (N.M.) on May 24, 1916, but no definite attack of dengue developed. This patient's temperature had a definite tendency to be above normal from the start, several times rising to just over 99°, and on June 8, 1916, the afternoon temperature was 102°; on June 9, 1916, at noon, it was 100°, in the afternoon, 102°; on June 10, 1916, at noon, it was 101°, in the afternoon it was 100.8°; on June 11, 1916, at noon, it was 99.2°, and in the afternoon 101°. After this the temperature, taken once daily, was normal. He did not complain of any symptoms. The second injection led, therefore, to a doubtful, but probably a negative result, as the definite febrile reaction that occurred did so 15 days after the inoculation, suggesting that it arose from some other cause.

Case IV.—Wm., æt. 27, male, laboratory assistant.

May 14, 1916.—Between 11.50 a.m. and 12.30 p.m. he was bitten by *Stegomyia fasciata*; 36 bites were counted.

May 15, 1916.—At 12.30 p.m., about 22 *Stegomyia* bit; at 4.30 p.m., about 14 *Stegomyia* bit.

Cold in the head during the last few days, but subsiding on May 20, 1916.

May 20, 1916.—On going to bed he had headache, and passed a bad night. He had a sore throat. The temperature was not taken. The onset occurred at about 9 p.m. The shortest possible incubation period was 5 days 5 hours, and the longest possible incubation period was 6 days 9 hours.

May 21. 1916.—He said that his "eyes, ears and all joints and parts of body are painful." He stopped in bed all day. The headache was frontal, at the back of the head and

"behind the eyes." His gums were tender. There was pain in the neck and spine; it was very bad in the lumbar region. "Every part of body was aching." Nausea was present, and he had no appetite; there was no diarrhœa; no delirium was noted; he was slightly constipated. He had no cough, but a sore throat. Some coryza was present. The temperature was not taken.

May 22, 1916.—The patient got up at 8 a.m. Giddiness was present, and shivering. He vomited twice, and was much nauseated, and had no appetite. He came in to be examined. A definite rash, "midway between scarlet fever and measles," was found on the arms. It was doubtful on the back. This man said that his rash was often very definite on the arms on waking in the morning, but faded later. He looked ill, and showed a swollen, typical "dengue face." The tongue was furred in the centre and slightly strawberry at the tip. He was sent home too ill to work, and was very nauseated in the tram. The temperature on arrival at the laboratory was 99.6°, and the pulse-rate 82. The temperature later in the day was higher (see chart). Blood was taken from a vein for injection experiments. The Wassermann reaction was negative. Blood examination: Leucocytes, 3,700; polymorphonuclears, 53%; large mononuclears, 9%; lymphocytes, 30%; transitionals, 8%. No parasites found. Red cells normal. (Amalgamated count by J.B.C. and B.B. Only 100 cells counted altogether.)

May 23, 1916.—On rising, at about 9.30 a.m., the temperature was 98.4°. On arrival at the laboratory at 10.15 a.m. he complained of an oppressive feeling in the chest and headache. There was a rash on his back, subcuticular, measly, mottled, not well marked. It was still visible on the arms, especially on the under-side of the forearms. At 4 p.m. he went home, as his back and head felt too bad to continue work, and he looked flushed and sick. His temperature was then 99.6°.

May 24, 1916.—He did not feel very well on rising, but was fairly well afterwards. His temperature, taken once only, was 99.7°, and his pulse-rate 96.

May 25, 1916.—In the morning he felt fairly well, but towards 2 p.m. felt much worse. The headache was bad and there was a tired aching in his limbs. The temperature was 102.2°. Blood examination: Leucocytes, 2,800; polymorphonuclears, 59%; lymphocytes, 30%; mononuclears, 7.5%; transitionals, 7.5%; eosinophiles, 1%. (Two hundred cells counted.) Red cells normal. No parasites. The Widal reaction was negative. Rash.—This was definite, but slight, on the back, chest and abdomen, and on the anterior internal surface of the right upper arm, over the biceps near the rolled up cuffs, was a collection of slightly raised papules, which disappeared in a day or so. Elsewhere there was a faint measly rash.

May 26. 1916.—The temperature was subnormal. The man returned to his work nearly well. After this he regarded himself as well.

Blood from this case, taken on May 22, 1916, was injected into Volunteer Sull, on May 24, 1916. The latter complained of drowsiness and aching eyes at 1 p.m. on May 29, 1916, but his temperature was subnormal, and he was placed in bed at 6 p.m. on May 30, 1916, when his temperature was found to be 101°. He went through a typical attack of dengue, with rash and slow pulse, but without the double temperature curve.

Case V.—M., 27, female, trained nurse. Previous history: She lived in the North Coast district about eight years ago. About eight or nine years ago she had two attacks of (?) dengue (a year or more apart). She spoke of the sudden onset and extreme pains, but says she did not notice a rash.

May 16, 1916.—She was bitten by 18 *Stegomyia* mosquitoes at noon.

May 25, 1916.—She was quite well all day, until about 10 p.m. While sitting sewing and listening to music, she suddenly felt sick and tired, with pains in her knees, and went to bed shivering, and did not sleep until 4 a.m. She said she did not feel as if feverish, and did not take her temperature. Incubation period: 9 days and 10 hours.

May 26, 1916.—She got up with a headache over the eyes and across the temples. The eyes were painful to move. The morning temperature was 98.6°. She worked all day, though not feeling well, having some nausea, but no vomiting. Occasional shivering occurred. The tongue was clean. Her eyes were slightly red and conjunctivæ of lids swollen; no coryza or cough was noted. She complained of slight sore throat. The fauces were slightly red; but nothing very definite was seen. Temperature: 6.15 p.m., 99.6°; 9 p.m., 100.6°. She stated that she had no rash.

May 27, 1916.—The temperature at 7 a.m. was 99.6°; at 11 a.m. it was 99.4°, and at 4 p.m. 99.2°. The eyes were slightly jaundiced, and the ears slightly yellow, but she said the jaundice was more marked before she got ill on May 25, 1916. The face was flushed, and she said her eyes were painful on movement, but the other symptoms were better. She had no pains in the neck, but had pains across the back and down the back of the legs, and occasionally a feeling of nausea. No rash was noted. She was not examined, except her arms, face, etc.

May 28, 1916.—She stopped in bed, as she usually did on Sunday morning, for rest. On examination (B.B.) the temperature was normal. The skin was mottled over the back, chest and arms, not a definite rash, but abnormal. The elbows were red and pimply looking, not very marked. She said she felt weak. Glands were found enlarged in the anterior triangle of the neck, on the left side; but these may have been present before. The temperature went up in the evening (see chart).

May 29, 1916.—At 9 a.m. she stated that she had had a very bad night, and could not rest at all. She had a recurrence of symptoms, and felt and looked sick. The headache was bad last night, and she took aspirin with relief. On rising, Matron described a well-marked, measly rash on her arms, which faded on exposure to cold. It was scarcely perceptible at 9 a.m. A mottled, indistinct rash was now on the back. The elbows showed a very marked and curious condition. The affected areas were about the size of a crown-piece, red, raised, of a bright pink colour, and in the outlying parts were separate papules. She said it was painful to touch. This most distinct condition was seen by the Matron and B.B. Blood examination: No parasites seen. Red cells normal. Leucocytes (duplicate counts made), 19 whole millimetre fields counted, 1,750. The morning temperature was 100.2°; at noon it was normal, and it was up again at night to 102°. The tongue was furred in the centre, and strawberry-like at the tip.

May 30, 1916.—The patient said she had had a very bad night. Yesterday afternoon she got worse, felt very ill and could not rest at all at night. She could not lie in any position. She said never before had she felt so bad. On examination at 9 a.m., she looked ill; her face was flushed. The tongue was dirty, but not as much as yesterday. The temperature was 99.8°.

The rash was very marked on both arms. It was for the most part of a dark purplish pink colour, and measly in type. It was most marked on the external and extensor surfaces of the fore and upper arms to the shoulders. Over the elbows it was more raised and slightly papular. Very distinct discrete macules were fairly numerous on the palms of the hands. On the upper chest and on the upper back there was an indefinite mottling; on the lower back the mottling was more marked, but not as distinct as on previous occasions. On the knees there was a discrete, small papular rash over the anterior surface for about six to eight inches. On the ankles there was a similar discrete, papular rash on the anterior surface, extending about four inches up the leg and slightly on to the dorsum of the foot.

She was seen by Drs. Paton, Armstrong, Van Someren, Woolnough, R.M.O., and by Dr. Bligh on the evening before, when the rash was distinct.

She stated to one of us later that, about this time, the rash was marked on the abdomen.

After May 30, 1916, we did not see this patient, and she stopped taking her temperature, but she informs us that she was feeling sick at irregular intervals for a day or two, and suffered for about a week from marked pruritus, especially of the palms of the hands, severe enough to prevent her sleeping.

B.B. saw her next during his own illness, on Sunday, June 4, 1916, when she was apparently quite well, but still complaining of the itching. Later she said she had occasional headaches for about a week after May 30, 1916.

The drawing of the arm of this case was done by the Government Artist. We are of the opinion that the pale areas (unaffected skin) are somewhat too definite at the edges, but did not allow him to make any alteration, preferring his drawing to be an unprejudiced impression of a non-medical observer, an expert in matters of colour and form, but with no experience of or interest in whether or not the rash was that of dengue fever.

(To be Continued.)

Reports of Cases.

A CASE OF EXTREME ENLARGEMENT OF THE LIVER, DUE TO SECONDARY DEPOSITS OF ADENO-CARCINOMA.[1]

By **Eric Jeffrey, M.A., M.B., Ch.M.,**
Late Assistant Superintendent, Sydney Hospital.

W.I., æt. 62 years, male, was admitted to Sydney Hospital on June 16, 1916. He was sent in by a country doctor, with a diagnosis of either hydatid or cancer of the liver. There was nothing notable about his family or personal history; he was a slight drinker; he denied syphilis, and the Wassermann reaction was negative.

He stated that six weeks before admission he had been caught in a storm, and had contracted a chill, with shivering. Three weeks later he got severe pain in the upper part of the abdomen, and felt a small mass the size of a walnut under his ribs on the right side. This gradually became larger, but the pain did not increase. The pain was worst if he took a deep breath. He had had no vomiting or pain after food, nor had he lost much weight lately. His bowels were opened regularly.

On examination, his abdomen was found to be very distended, and a large, dull, tender, nodulated mass, obviously the liver, was felt below the right costal margin, extending down to and resting upon both iliac vessels. There were a few scattered rhonchi in his lungs.

Inoperable malignant disease of the liver was diagnosed. His sufferings were alleviated with morphine, and he died on July 12, terribly emaciated.

Post-mortem examination showed a primary adeno-carcinoma of the stomach, with secondary deposits in the base of the lung (which may have accounted for his pain on deep breathing), and also in the liver. This latter organ weighed 18 lbs. Its measurements were: Coronal diameter, 15 inches; sagittal, 6 inches; and vertical, 12 inches.

The points of interest in this case are the absence of symptoms of primary disease in the stomach, the rapidity of the growth, and the enormous size of the liver.

I am indebted to Dr. Macdonald Gill for kind permission to publish the notes of this case.

[1] Read at a Meeting of the New South Wales Branch of the British Medical Association on August 11, 1916.

Reviews.

PSYCHOLOGY.

Under the title of "Collected Papers on Analytical Psychology,"[2] by C. G. Jung, M.D., LL.D., translated and edited by Dr. Constance Long, we have another contribution to the literature on conditions and phenomena attributed to the subliminal division of the psyche. The book is apparently not intended primarily for beginners in the study of psycho-analysis, as, in the preface, the author points out that "it is not my intention to give a presentation of the fundamental concepts of analytical psychology in this book." In order to understand this work the reader should have previously read some other work explaining psycho-analysis. The collected papers deal in a series of lectures with about sixteen different subjects, many of which have already been discussed by other followers of the Freudian school. The psychology and pathology of so-called occult phenomena, such as ambulatory automatism, hypnagogic states, trance, etc., are about the best that has so far been written on these subjects. The term "association test method," used by psycho-analysts for discovering hidden complexes which are responsible for the neurosis under treatment, is carefully explained by means of diagrams and examples. In the following lecture the author points out how persons related, or having things in common, develope the familiar constellation, which means that they have grown similar in disposition through propinquity. For this reason of familiar constellation Jung explains why it is that a girl who has seen her mother suffer all her life through a drunken husband, will herself marry a man who is intemperate in drink. The chapter on the psychic life of the child will not be acceptable to many, because it credits a child of four years of age with trying to solve the problem of her baby brother's recent arrival by a line of reasoning that would do credit to a barrister in the Supreme Court. It is in matters of this kind that Freudism creates its antagonists. In the lecture on the significance of the father in the destiny of the individual, Jung illustrates the influence of the father complex on the son or daughter, thus producing a neurosis. As an example of the tendency to refer neuroses to the influence of a sexual complex, we are told of a boy of eight years, his mother's darling, owing his enuresis to his identifying himself with his mother, and feeling like a woman towards his father, the enuresis being the sexual surrogate. In a contribution to the psychology of rumour and the article on dream numbers we come to a part of the road where the English psychologist refuses to travel in the same company as the Continental investigator. These two chapters are the weakest in the book. In Jung's criticism of Bleuler's theory of schizophrenic negativism we are told that "Resistance always springs from a peculiar sexual development," and resistance causes negativism, so that all persons showing negativism are victims of a peculiar sexual development. In the article on psycho-analysis, Jung explains the difference between the Zürich school, represented by himself, and the Vienna school, led by Freud. The Vienna school interprets dreams with an exclusively sexual meaning, whilst the Zürich school interprets the dream symbols symbolistically, *i.e.*, gives a positive value to the symbol. Jung acknowledges in his letter to Loÿ that the literature on psycho-analysis is confusing and somewhat contradictory, and he maintains that psycho-analysis contains no suggestion or hypnotism when correctly performed. In hypnotism the patient relies upon the medical man, while in psycho-analysis the patient relies upon himself and strengthens his character thereby. The bringing to light of the complex by talking about it brings about harmony, and the neurosis is cured.

In the psychology of dreams there is an interesting explanation of the cause of dreams, but the interpretation is not so convincing, because Freud and Jung explain the meaning of the same dream in two distinct ways. This arbitrary method of dealing with what Jung and others claim to be the chief stand-by in psycho-analysis, does not tend to promote the confidence of doubters of the efficacy of psycho-analysis as a therapeutic agent. The deductions and interpretation of a dream, depending as they must do upon the personal equation of the interpreter and the school of reasoning to which he belongs, must necessarily lead to very diverse meanings.

Because pathology had little to offer the psychiatrists until Freud advanced his theory, Jung and the Zürich school have disregarded the physical origin of mental disorders in favour of the psychological explanation. The subject-matter of this book holds the reader's attention, no matter how sceptical he may be in regard to the theories advanced. Those interested in "mental" work should read it.

[2] Collected Papers on Analytical Psychology, by C. G. Jung, M.D., LL.D.; Translated by Dr. Constance Long; 1915. London: Baillière, Tindall & Cox; Demi 8vo., pp. 392. Price, 12s. 6d. net.

The Medical Journal of Australia.

SATURDAY, SEPTEMBER 2, 1916.

Orthopaedic Treatment for Our Soldiers.

Among the things that matter, none matter more to us than the welfare of those brave compatriots who have left the Commonwealth to help the Empire to gain a complete victory over the forces of the Central Powers of Europe. The defeat of the Scaddon Ministry, the abolition of the upper chamber in New South Wales, the improvement of the condition of the workers in various industries may all be matters of moment, but by no conceivable stretch of imagination can they compare in urgency with the proper care of Australia's soldiers. On several occasions in the past we have drawn attention to the need for a proper organization of a scheme for the orthopædic treatment of men wounded in limbs. On June 17, 1916, we emphasized importance of this matter, in the hope that the authorities would realize their responsibilities and formulate a scheme. Still nothing has been done.

It is therefore necessary to recur to the matter once again, and to press for immediate action. There is ample evidence that many of the men who are wounded could be saved pain, long illness and permanent disability by the timely institution of skilled treatment. Orthopædic surgery has advanced by leaps and bounds within the past few years, and by its means to-day, limbs can be saved that formerly would have been hopelessly lost, paralysed muscles can be restored to function by nerve suture or replaced by transplanted healthy tendons, and when the limbs are unsavable artificial substitutes can be provided which enable men to lead an active and useful life. But none of these things can be achieved without a properly organized service, such as that which has existed for some time in France, and for a little time under the directorship of Robert Jones in England.

The first essential for success in a scheme of this nature is the appointment of men who have established for themselves a solid reputation in this branch of surgery. It is not sufficient to hope that a promising surgeon may develope into a good orthopædic specialist. There is no time for experiment, and our men are too good to justify such a procedure. The appointments should be carried out with circumspection and with intimate knowledge of the undertaking. Satisfaction cannot be attained if the appointments are made by one man, no matter how capable an administrator he be. We would therefore suggest as the first step in the orthopædic scheme the institution of an "Appointments Board," consisting of two of Australia's most prominent surgeons, two of her most prominent physicians, and two of her most prominent pathologists. The only qualification for the Inspector of Military Orthopædics should be competence in orthopædic surgery. Once this step has been taken, the Inspector could consult with the members of the Appointments Board and with the Director-General of Medical Services before the service is definitely planned. The scheme which we proposed tentatively, or any other that presents itself to the Inspector, could be developed rapidly, and once it has been decided upon could be put into action without loss of time. There is one condition necessary for success, in addition to the appointment of the right man. That is that the orthopædic work be taken out of the hands of those who are doing it at present as part of their general duties. The wounded men must be taken charge of by members of the orthopædic staff from the time of discharge from the Casualty Clearing Station to the Base Hospital until human skill can, or need, do no more for them.

We claim that there is no justification for further delay. In so urgent a matter, "here and now" should be the motto.

CALUMNY.

In the course of his speech to a deputation of members of the Parents' and Citizens' Association the Minister for Education of New South Wales made some remarks of so misleading a nature that it is impossible to allow them to go uncontradicted. The speech was, no doubt, coloured by the desire to secure the votes of parents, and might therefore be discounted. It appears, however, from a leading

article in one of the daily newspapers of Sydney, that the position is still misunderstood, and that the public has been led astray by the interpretations placed upon the action of the members of the New South Wales Branch of the British Medical Association by the Minister and his colleagues.

The Minister stated that he had never met a doctor who had really approved of the action of the Council of the New South Wales Branch in connexion with the treatment of school children. He is probably aware of the fact that the policy of the New South Wales Branch of the British Medical Association was adopted unanimously at a general meeting of the members, and was not dictated by the Council. But the public does not know this, and it therefore becomes essential to make the reply unequivocal and plain. Every medical practitioner in the State who understands how much is involved in the proper treatment of the children of the State regards the proposal of the Department of Education to extend treatment through salaried officers with grave misgivings. Mr. Griffith has stated that he was determined that Australia should learn even from her enemies. It is true that school clinics were first started in Germany, and it is also true that one of the most carefully-organized clinics, which was at the same time one of the earliest, is the now famous clinic at Charlottenburg. It may be news to the Minister, but it is nevertheless true, that the failure to achieve satisfactory results at this clinic has long ago been admitted, and that the experts in school work insisted on the treatment of the children being undertaken either by private practitioners or at public hospitals. The reason is not far to seek. A practitioner who has the confidence of the family and who spends his whole life in treating disease in its varied forms is more likely to take a wide aspect of affairs and to recognize the individual factor than the whole-time Government Officer, who is required to undertake the care of vast numbers of children. In the next place, the system of engaging medical practitioners for the purpose of carrying out the treatment of illness in a community has practical disadvantages attached to it. This system may be necessary, and in these circumstances the disadvantages must be tolerated; but those who have had experience of it admit that the interests of the patient as an individual and the happy relations between the doctor and patient, which has a high therapeutic value, are necessarily sacrificed. Hitherto, the members of the medical profession have dealt directly with the community, and resent all interference of third parties.

It is quite easy to obscure the main issue by the introduction of matters of ancillary importance. The Minister has attempted to do this. He started with the statement that "The British Medical Association says that a child" (he was referring to a Newcastle child who was under treatment for an eye affection) "shall go blind if it cannot afford to pay for an oculist." The suggestion that any medical practitioner would allow a child or an adult to go blind because the parents were unable to pay a fee is a base and malicious calumny. Expert ophthalmologists are, with but few exceptions, members of the honorary staffs of the public hospitals, and in those cases in which special skill in the diagnosis and treatment is required, the services of these men can be obtained, either in private or in hospital. It goes without saying that when a child of well-to-do parents is taken to a general practitioner or a specialist a fee is required. In this connexion the Minister accused general practitioners of one of two offences. He stated that if the children were taken to a local practitioner, they would either be butchered or, if the practitioner was an honest man, be sent to Sydney to be fixed up for a high fee. Could any statement be more malicious? The appointment of whole-time medical officers under the Department would not be a remedy. We have the experience of the taking over the care of the feeble-minded by the Department from the State Children's Board and the dismissal of an expert neurologist and psychiatrist, with the substitution of a practitioner who cannot be regarded as a neurological expert. Even if Mr. Griffith sent to China for his doctors, as he threatened to do, he would not succeed in appointing experts of experience to whole-time positions. If Mr. Griffith desires the assistance of specialists of experience he will have to accept their services on their, and not on his, conditions.

The reason why the Department of Education cannot secure the services of doctors for this wrong-headed scheme is because the doctors know that

PLATE ILLUSTRATING DRS. J. B. CLELAND, BURTON BRADLEY AND W. McDONALD'S ARTICLE.

the best interests of the children would not be served by it. Did they refuse to treat children, save for exorbitant fees, it would be justifiable to speak of a strike, as has been done in the leading article referred to. But while the doctors are prepared to give their best to the little ones of the State at hospitals the word is misapplied.

THE COUPON SYSTEM.

The vexed question of medical attendance has been solved at last. The Committee of the Lower Burdekin District Hospital have solved it, and, of course, there is little need to say any more about the matter. True, the system is not yet in force, and we may also note in all humility that it has not yet received the support of those chiefly concerned either in Lower Burdekin, the State of Queensland, or in the Commonwealth of Australia.

The story of the coupon system, which is the machinery for solving the difficulties connected with the provision of medical attendance for the whole community, is a simple one. The district found itself in need of a hospital. A committee was appointed on January 17, 1914, to give effect to a decision of the inhabitants of the district to erect a hospital. This committee found that a hospital with twelve beds would satisfy the demand, and discovered that if they could raise a sum of £816, the Government would probably contribute £2 for each £1, and the building could be erected. The matter received a set-back on the outbreak of war, and when revived at a later date it was found necessary to modify the plans and to increase the estimate for building to £3,122. The Committee raised its proportion of the sum, and work was finally begun on August 28, 1916. The Committee recognized that the building of the hospital was one thing and the control of medical matters was another. The opportunity was present; why not grasp it? The hospital was taken as a pretext, and a scheme was drawn up by which everybody in the district could command treatment, either in the wards or in the out-patient department of the hospital for himself, his wife, family and dependents for the payment of 5s. per quarter. No further payments would be required. Employees came under one clause and employers and others not employees came under another, but in both cases the contribution was to be 5s. Females and old-age pensioners were to obtain the benefits without contributing anything.

We need not discuss the other details. The other nine reasons why the clergyman refused to play cards with three casual acquaintances in a railway compartment did not interest the three individuals when they learned that the first reason was that he had no money. Contract practice is necessary, because it enables persons with small incomes to make provision against the cost of illness, without any financial strain. It has no other justification. When a scheme is propounded for the extension of the contract system beyond the limits of its original application, we need scarcely argue beyond the first and essential objection to it. We are informed that Ayr and the other townships in the Lower Burdekin district support one medical practitioner. It is naturally hot in this part of Queensland; further sweating is unnecessary. The practitioner in Ayr will not accept the conditions of the coupon system and place his fortunes at the disposal of the A.W.U. or of the Hospital Committee. The Queensland Branch of the British Medical Association will, when the time comes, warn its members against accepting the position, on the ground that the institution will be a hospital in name only and in reality an institution governed locally for the universal provision of medical attendance on rich and poor alike. We do not think that the coupon system will enjoy a long or a merry life.

A NEW HOSPITAL.

The Minister for Railways of New South Wales, officiating at the opening of a new hospital at Gilgandra, on August 18, 1916, made certain remarks which, if correctly reported in the public press, and if spoken with the authority of the Ministry, should be recorded in these columns. After referring to the importance of safeguarding the public health, he complimented the people of Gilgandra for having instituted their hospital free of debt. It became their duty to keep up a fully-equipped hospital. The Minister continued by emphasizing that there was no greater work than that of succouring the poor in hospitals. It may be pointed out that no mention was made of the whole community. It was the poor that were specially and exclusively mentioned. His subsequent remarks were directed toward the encouragement of every citizen to give something to the charity of hospital maintenance. Those who had no money to spare might contribute in kind, and every glass of beer abstained from would enable the willing to buy something useful for the hospital.

It will be noted that there are two propositions included in these remarks. The first is that hospitals are charitable institutions, intended for the medical treatment of the indigent poor. The second is that the community should be incited to regard it a special privilege to support the charitable institution for the benefit of the poor. Recent events reveal that in every State in the Commonwealth the Labour politician is attempting to change the functions of hospitals until they become a sort of glorified national asylum for the sick of all grades of society. Little thought is directed to the fact that the members of the medical profession give their services to the hospitals because they supply the needs of those who are unable to command them in the open market. The policy of the medical profession has always been to provide all the available skill, care and knowledge, without remuneration, in the hospitals to the poor, and to refuse to treat the well-to-do in these eleemosynary institutions. According to the Minister for Railways of New South Wales, the doctors' conception of hospitals is not far from the mark.

Abstracts from Current Medical Literature.

PATHOLOGY.

(80) Toxic Lesions of the Adrenal Glands.

G. S. Graham records observations on the cellular changes which take place in the cortex of the suprarenal capsules in toxic conditions of both infectious and non-infectious origin (*Journal Medical Research*, May, 1916). Changes have been produced in various ways in guinea-pigs, and these changes have been compared with those found in the human subject. Necrotic changes can be induced in the cortex of the adrenal glands of guinea-pigs by the exhibition of phenol subcutaneously or of chloroform, di-chlormethane and tetra-chlormethane by inhalation. After the administration of phenol congestion occurs in the medulla and in the inner layers of the cortex in eighteen hours. Three or four hours later the zona reticularis contains many degenerating cells. The cytoplasm is either homogenous or turbid. It retracts in many cases towards the centre of the cells, leaving a peripheral vacuolated area. With chloroform these necrotic changes are marked after anæsthesia for two to three hours. The cortex of the gland shows an outer layer, in which the cells are unchanged, formed of the zona glomerulosa and of the outer third of the zona fasciculata, a middle zone composed of necrotic cells, in which the nuclei are broken up and the cell columns no longer evident, and an inner zone made up of the zona reticularis, in which the cells are somewhat degenerate. When the necrosis is due to infective conditions similar changes are observed. The author has described the conditions of human adrenal glands in which necrotic changes have occurred after diphtheria, scarlet fever, measles and other contagious diseases. In general, the changes begin in the middle of the zona fasciculata, and the columns may be destroyed, except at their outer ends. The zona glomerulosa is rarely affected, though the zona reticularis may be involved. In addition to this generalized form of necrosis, common in severe cases of diphtheria, which die at the sixth day, there exists a tendency in the human subject for focal patches of necrosis to be scattered throughout the cortex of the gland. While the study of the destructive lesion has been of much interest, more attention has been devoted to observations on the regenerative changes which occur during recovery. The necrotic cortical cells are replaced through the mitotic division of undamaged cells lying usually in the more peripheral levels of the cortex. The readiness with which mitotic figures can be found in sections of the cortex of the suprarenal capsules, both in the human subject and in guinea-pigs, show that the cells of the gland possess regenerative powers similar to those known to reside in other organs, such as the liver. This cellular proliferation can also extend into the medulla, where the chromaffine cells may undergo frequent divisions.

(81) Micrococcus in Enteric Fever.

H. Carageorgiades has confirmed and extended the observations of Sartory, Lasseur and Spillman, and Lebrun and Portier on the presence in the blood of certain soldiers, suspected of suffering from enteric fever, of a micrococcus (*C.R. Soc. Biol., Paris*, January, 1916). These micrococci, which grow in masses and stain strongly by Gram's method, are obtained from blood cultures. In some cases the micrococcus occurs alone, but in other cases it has been associated with the bacillus typhosus and the paratyphoid organisms. The micrococcus was at first believed to be present from an accidental contamination with staphylococcus. The author has studied carefully the micrococcus isolated from the blood of a soldier who was admitted to hospital with alarming symptoms of high fever, stupor, cold sweating and involuntary evacuations of the bowels. This was the third case in which the micrococcus was separated by the author. The micrococcus has been isolated by sowing the blood into a mixture of peptone, glycerine and sea-salt. After 13 hours the liquid was turbid. Microscopical examination showed the Gram-positive cocci among Gram-negative rods. The coccus has been isolated by plating upon agar. The colonies were tested on glucose peptone, Wurtz' agar, lead agar and Barsiekow's medium. Gas appeared in twelve hours in the peptone water. The lead agar was not blackened. The Wurtz' medium remained blue. The bacillus was thus identified as *B. paratyphosus A*. The micrococcus was isolated and its characters examined. It appeared immobile, and formed no odour. Its colonies on agar form a whole flat growth, but when the juice of the potato is present a light yellow colour is noted in the colonies. On certain media, and with special staining, a capsule can be demonstrated. The organism grows well on all media. It possesses much vitality, and does not tend to die out of old cultures. It does not grow at temperatures below 22° C. It produces uniform turbidity in broth and peptone water in twenty-four hours. It does not liquefy gelatine, but if the gelatine tube is kept in the incubator at 37° C. for some hours the gelatine will not set on cooling to 15° C. Proteolysis can thus proceed at appropriate temperatures. The coccus does not coagulate milk. Lactose and sucrose are not attacked. Glucose, mannite and glycerine permit of the formation of acid, but not of gas. Injections into white rats of 2 c.cm. of the cultures have produced no ill-effects.

(82) Supervitality of Encysted Amœbæ.

J. G. Thomson and D. Thomson have recorded some observations on the persistence of living cysts of *Entamoeba tetragena* and *Entamoeba coli* in fæces kept in the laboratory or buried in sand (*Journal Royal Army Medical Corps*, June, 1916). Cysts of *Entamoeba tetragena* remain alive in a mass of fæces for at least sixteen days. No signs of degeneration can be detected with the microscope. Cysts of *E. coli* remain present in solid stools for a week, but they disappear from fluid stools in two days. When buried in sand the fæces show cysts of both parasites, provided the fæces do not undergo complete desiccation. The authors have also made some observations on the infectivity of fæcal material containing cysts obtained from a carrier. They smeared the fish and contaminated the milk ingested by a kitten with small amounts of fæces from an infective person. The kitten ate the infected material with relish. Its fæces after some days revealed the parasite.

(83) Cytology of Traumatic Hæmothorax.

D. Dupérié has examined by cytological, chemical and colorimetric means the fluid present in the chest in forty-three cases of penetrating wound of the thorax (*C.R. Soc. Biol., Paris*, December, 1915). In benign hæmothorax, which is afebrile, due to a simple hæmothorax, with eosinophilia or a complex hæmothorax, with serous eosinophilic pleurisy, the initial period is characterized by a pale yellow, orange or citron-tinted coloration of the fluid. The erythrocytes show diminished resistance, so that they hæmolyse in 0.7% or 0.6% sodium chloride solution. Polynuclear neutrophile leucocytes are present among the red cells. A week later the liquid becomes golden yellow, and yields a positive result with Gmelin's test for biliary pigments. A pronounced eosinophilia dominates the leucocytic picture. The erythrocytes have diminished in numbers. These cells have become more resistant to hæmolusis, and may not hæmolyse in 0.4% sodium chloride solution.

(84) A New Hæmatoxylin Stain.

L. Triboneau, M. Fichet and J. Dubreil have prepared a hæmalum which contains silver hæmateinate (*C.R. Soc. Biol., Paris*, April, 1916). This hæmalum is more readily prepared than those of Mayer or Gohmer, while it possesses the advantage of permanency. It stains rapidly, and has a high degree of specificity for the chromatin of nuclei. The hæmatein is made by treating an alcoholic solution of hæmotoxylin with oxide of silver. The silver oxide is formed by adding potash to a solution of nitrate of silver. The precipitated oxide is washed rapidly four times by decantation. The hæmotoxylin and silver oxide are mixed and warmed on the water-bath. As soon as the hæmatoxylin is transformed to hæmatein, the excess of silver oxide is removed by filtration through paper. The stock solution keeps indefinitely. When required, it is diluted twenty times with a solution of potash alum. The solution is used in the same way

as ordinary alum hæmatoxylin. The sections can be counterstained with eosin.

PÆDIATRICS.

(85) Chloroma.

Chloroma is most probably due to a hyperplasia of the parent cells of the leucocytes, especially in the red marrow of the bones, and also in any of the leucoblastic tissues of the body. It occurs most frequently in male children, and the chief clinical features are an exophthalmos, due to rectro-bulbar lymphoma; swellings of the temporal and occipital regions, due to involvement of the cranial bones; enlargement of the spleen and lymphatic glands throughout the body, especially of the cervical region; and a severe and progressive anæmia, causing weakness, fever and emaciation. Hyperplasia of the marrow cells may occur in any of the bones of the body, but the skull bones are usually affected most profoundly and at the earliest period. The anæmia is due to a deficient production of red cells, the hyperplasia of the leucoblastic elements leading to a crowding out of the mother red cells. Frequently large numbers of white blood cells of various types appear in the blood-stream, giving a characteristic leucæmic picture. The name "chloroma" is given to the disease because of the peculiar colour seen in tumours removed by operation, and this colouring is seen in any of the new growths, even in the blood-clot in the heart, and especially in the bone marrow. Histologically the disease belongs to the leucæmias; the various tumours are composed almost entirely of cells of leucoblastic origin. In one case the tumours have been shown to be primary in the bone marrow spaces, and to infiltrate or grow through the lymphatics and blood-vessels or break through the bone, and secondarily to involve the periosteum and surrounding tissues. Gould and Le Wald (*Archives of Pediatrics*, June, 1916) report two cases of this rare condition, and give detailed histories with X-ray findings. In both cases the X-ray pictures showed marked separation of the suture lines of the skull, due to proliferation of the bony tissues. In one case the long bones were studied, and the changes appeared to be essentially a rarefaction and proliferation in the medullary cavities over a variable distance from the surface of the shaft. The absence of epiphyseal changes distinguishes the condition from infantile scurvy or rickets. The combination of the periosteal changes with the changes in the medullary cavity excludes a myelomatous lesion. The extent of the process distinguishes the condition from sarcoma. The changes in the medullary portion of the bone appear to be distinctly different from syphilis. The authors agree that: (1) Chloroma is a tumour-like hyperplasia of the parent cell of the leucocytes, primary in the bone marrow, the periosteum being involved only secondarily. (2) As a result of this leucoblastic hyperplasia atypical leucocytes, or leucocytes corresponding to some of the normal types, may appear in the blood-stream in varying numbers. (3) The essential difference between chloroma and other forms of leucæmia is the marked neoplastic character of the former and the formation of the green infiltrations and metastases.

(86) Fainting Attacks in Children.

Children of both sexes suffer from "faints," but girls rather more frequently than boys. Occasionally they date from quite early life, but usually do not appear until about the fifth year or later, and are commonest after the school age. In general features, the attacks are very similar in all cases. The child is observed to "go white"; he may fall down, but does not lose consciousness entirely, although, in some cases, he is dazed, or even only semi-conscious. Occasionally, retching, or even vomiting, occurs; but in no case is urine voided involuntarily. The attack lasts for a period varying from a few minutes up to half-an-hour or even longer, and passes off gradually. Sometimes headache follows. The attacks usually appear in the morning, often before breakfast, or while the child is getting ready for school. Many of the children are nervous and dyspeptic, but in many the health is quite good, and the appearance of the child flourishing. There appears to be no relation between the attacks and the occurrence of any previous disease. Hutchison (*British Journ. Diseases of Children*, June, 1915) was able to note a "fainting turn" in a boy of 10 years. The boy became pale and giddy, the pulse very slow and feeble, and the heart sounds toneless. He was quite conscious, but somewhat confused. In the recumbent position he gradually revived and then flushed a little. In these cases there seems to be no definite causal factor, but over-strain at school may play a part. The association of dyspepsia and nervousness with the attacks is probably only a coincidence. Minor epilepsy is the only condition likely to be mistaken for them, but with "faints" consciousness is not completely lost, and their duration is usually much longer than an epileptic seizure. There is no reason to suppose that the heart is primarily at fault, and in only one of the author's reported cases was anything abnormal detected in this organ. Probably the condition is primarily nervous in origin and is due perhaps to a temporary sympathetic paralysis, leading to uncontrolled action of the autonomic system, with vaso-dilation in the splanchnic area and inhibition of the heart. Treatment consists in removal from school, change of air, and the use of strychnine, with attention to the digestive organs.

(87) Milk Proteins in Infant Nutrition.

Holt finds that, until quite recently, the difficult digestion of cow's milk protein was looked upon as the important, probably the chief, cause of trouble in infant feeding (*Arch. of Pediatrics*, January, 1916). Modern practice, however, has been in the direction of using much higher proportions of protein than were formerly thought wise or safe. Various metabolism experiments, as well as clinical observations, have shown that the infant possesses a remarkable capacity for retaining nitrogen. The protein need of the infant represents 7% of the calories required for nutrition, and this proportion is found in average breast milk. The ordinary feeding mixtures, containing cow's milk, have a much higher percentage of available protein, even 17%. This protein is at first retained, but later increased intake is followed by increased excretion. Growth of the infant is not proportional to the protein intake, and cannot be increased above natural limits by increasing the intake. A too high protein intake may result in prostration, fever and leucocytosis, with increase in the general metabolism. If fats and carbohydrates are not furnished with the food in sufficient amount, there follows an actual loss of these substances from the tissues, and diarrhœa and a condition of semi-stupor may occur. It has been shown that the common food proteins are very complex substances, comprising 16 or 18 different amino-acids. Certain of these are indispensable for growth, while others are relatively unimportant. For example, without lysin no growth can occur, no matter what amount of other protein is given, though a condition of nutritional equilibrium can be maintained. Cystin, trytophan and glycocoll are also of great importance. Animal proteins, as a rule, are relatively rich in these essential amino-acids, while many vegetable proteins are very deficient in them. Lactalbumin contains the essential ones in the largest proportion; casein is deficient in at least one, *viz.*, cystin, and where this is the only food growth is limited. Ordinarily, this deficiency is made good by the amino-acids of lactalbumin, but it must be remembered that human milk contains relatively twelve times as much of this as cow's milk. Therefore, by reducing the protein content of cow's milk by dilution to the level of that of human milk, the amino-acids are diminished to such a degree that growth and nutrition are prevented. By the use of whole milk the amino-acid deficiency is diminished, the excess of other protein being dealt with by the organism without injurious effects. It appears (1) that the digestion of the protein of cow's milk is a much easier matter than was supposed; (2) that, while injury may without question be done by high protein feeding, this is very unlikely to occur unless amounts much in excess of those commonly used in infant feeding are administered; (3) that in such amounts there is as yet neither clinical nor laboratory evidence to show that protein is harmful; (4) that, although an infant receiving breast milk takes rather less than 7% of his calories as protein, this cannot be taken as an exact criterion of how much protein should be administered when cow's milk is the food; (5) that the deficiency of cow's milk casein in essential amino-acids may be made up by giving an excess of this protein.

PATHOLOGICAL CONDITIONS AT THE DARDANELLES.

A report has been published by Captains R. G. Archibald and G. Hadfield and Lieutenants W. Logan and W. Campbell on the work at the M. and H. Laboratories,[1] dealing with the diseases affecting the troops in the Dardanelles. The central laboratory was situated at M., which was only a few hours distant from the Peninsula, and it was established early in July. A month later, Lieutenant Campbell furnished an extension laboratory at W.B., C.H. This laboratory was intended to be of service in the event of an outbreak of cholera or serious epidemic among the troops on the Peninsula. Efforts were made to institute a similar laboratory at A., but the difficulty in obtaining a water-supply and the continuous and concentrated shell-fire caused the abandonment of the scheme.

The report deals with the work carried out at M. for a period of five and a half months, from August 1, 1915, to January 15, 1916. The climatic conditions on the Peninsula from June to September led to an affluence of flies and dust. There was little rain, and a compartively high temperature prevailed. In October there was a fall of temperature and an increased rainfall. With the change in the weather diarrhœa ceased and amœbic dysentery was almost entirely replaced by bacillary dysentery. Coincident with the altered climate there was an increase in infections due to the paratyphoid A organism, and a diminution in the infection with paratyphoid B organism. During the months of December and January these latter infections had practically disappeared.

Most of the material came from the stationary hospitals, though some was received from the naval and mercantile ships anchored in the harbour. The majority of the cases were illustrative of infections acquired on the Peninsula or in M.

During the five and a half months, 1,921 stools were examined. Of these, 518, or 27%, represented dysenteric stools. Of the dysenteric stools, 70% were due to amœbic infections and 13% represented bacillary infections. In the remaining 17%, no causal organism was discovered. From July to October the dysentery most prevalent on the Peninsula was amœbic. Almost all the cases represented infections with *Entamoeba histolytica*. The stools were typically dysenteric, consisting of blood and mucus, with or without fæcal material. As a matter of routine, whether amœbæ were found or not, a portion of the stools was plated on neutral red bile salt lactose agar, or on Endo's or Drigalski-Conradi's media. Specimens were suitably stained with iron hæmatoxylin or by Hasting's method to demonstrate the cytological characters of the causal amœbæ. When the pressure of work did not permit of laborious staining methods, the diagnosis was based on direct examination of the entamœbæ and of the cysts. Entamœbæ containing phagocyted erythrocytes were considered pathogenic, and not of the *E. coli* type. Clinically, these cases resembled entamœbic dysentery, and the exhibition of emetine was a success, provided that ten grains was given in a short period of time. Some cases proved fatal, and autopsy revealed perforation of one of the multiple ulcers in the colon or the presence of abscesses in the liver.

Bacillary dysentery was uncommon before November, when the case-incidence increased, while, in the following month, it was the sole type of dysentery found. Clinically, it did not exist in epidemic form, and it responded rapidly to treatment with a polyvalent dysenteric serum. The Shiga organism was isolated on thirty-five occasions, the Flexner germ on twenty-three. In eleven instances, the bacilli isolated remained unidentified through failure to respond to specific agglutinative tests.

During August, September and October diarrhœa was very prevalent, both on the Peninsula and at M. When sand-storms were common the incidence of diarrhœa was high. Sand as a causal factor was considered probable, both directly from mechanical irritation, and, indirectly, as a carrier for microbes. The presence of vast numbers of flies made it impossible to attribute the cases of diarrhœa entirely to sand. Probably the two factors, flies and dust, were responsible for the greater number of the cases of diarrhœa. The predominant organism was a non-lactose-fermenting diplo-streptococcus, which grew well on McConkey's medium in the form of delicate, clear colonies. The preponderance of this organism, as seen in stained preparations of the stools, left little doubt in the mind that it was accountable for the condition of diarrhœa. Morgan's bacillus was isolated in 1.5% of the cases. Several cases of diarrhœa in October were apparently due to infections with vibrios and spirilla. In a few instances the vibrios resembled the comma bacillus so closely that crucial cultural and agglutinative tests were necessary for diagnosis. In no case, however, was a true cholera vibrio isolated. *Trichomona intestinalis* was noted on fifty-seven occasions, usually in liquid bile-stained stools. Flagellates of the genera *Tetramites* and *Cercomonas* were only found on a very few occasions.

Malarial parasites of the benign tertian type were found in twenty-four patients. All had acquired their infection on the Peninsula, and chiefly in the vicinity of H., where anopheline mosquitoes were found breeding. Sub-tertian parasites were observed in two samples of blood.

Forty-six cases of relapsing fever were diagnosed from examinations of the blood. These cases occurred among men of the I. troops and of the E. Labour Corps. Some comparative observations were made with the relapsing fever cases of the I. and E. men, and evidence was collected in favour of the duality of the species of the infection. Unfortunately, it was not possible to carry out crucial tests by cross-immunization. The spirochaete of the E. type measured 16.8 microns, while that of the I. type measured 12.5 microns in length. Clinically, the E. relapsing fever was more severe. Jaundice, with enlargement of the liver and spleen, was always present. Pulmonary symptoms were absent. In the I. type the symptoms were often present. Epistaxis was noted in a few cases.

The examinations of the blood from cases of infective jaundice were disappointing, although they were carried out in different stages of the disease. Bacillæmia seemed to be the exception rather than the rule. The *Bacillus paratyphosus B* was isolated in one case. A similar organism was isolated from the gall-bladder in a fatal case. From the syphoned duodenal contents of a case of jaundice a Gram-negative diplococcus, probably of intestinal origin, was separated.

Bacilli of the typhoid-paratyphoid group were isolated from the blood in 147 patients. Of these microbes, 21 were typhoid germs, 41 were identified as *Bacillus paratyphosus B*, and 70 as *B. paratyphosus A*. In addition, there were 15 strains of the paratyphoid group which did not yield agglutinative reactions. Of these, one germ resembles the *Bacillus paratyphosus A* in type, while the others were similar to *Bacillus paratyphosus B*. From the fæces 18 strains of *Bacillus typhosus* were separated, 50 of *B. paratpyhosus B* and 11 of *Bacillus paratyphosus A*. Seventy-two strains were separated which did not agglutinate with special sera, while they resembled in their cultural characters organisms of the paratyphoid group. Blood culture in the first week of illness was regarded as most satisfactory for diagnostic purposes. This procedure was adopted whenever possible. The less suitable means of agglutinative tests with the patients' sera or by examination of the stools was used when requests for blood cultures were not made in the early stages, or where blood culture had given negative results. Many opportunities for performing blood culture were lost owing to sand-storms, which made an aseptic operation in the tests impossible. The blood was inoculated into a solution of sodium taurocholate. From this preliminary medium, McConkey plates were spread daily for four successive days. When a growth was observed, sub-cultures were made from isolated colonies on to lactose, glucose, mannite, dulcite saccharose and peptone water, while the likely bacilli were tested with agglutinative sera. Fæces were inoculated into McConkey's medium. Likely colonies were sub-cultured, tested with the sugars and observed for agglutinative reactions. Every stool was examined with the microscope for amœbæ, flagellates, etc.

The clinical features of the illness were the sudden onset, feverishness, headache and shivering. The tongue was furred. Spots were not, as a rule, seen in the first week, but occurred irregularly later in most cases. The splenic

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enlargement was not an early sign. Diarrhœa occurred in about half the cases due to *Bacillus paratyphosus A*, and in one-third of the cases due to *Bacillus paratyphosus B*. Vomiting occurred in the initial stages of one-third of the cases due to *B. paratyphosus A*, and in one-fifth of those due to *B. paratyphosus B*. The infections due to *B. paratpyhosus A* were indubitally the more severe.

An average of the duration of the illness at the time of a positive blood culture yielded 6.35 days. The average for the *B. paratpyhosus* infections was 5.4 days, for the *B. paratyphosus A* infections 6 days, and for the *B. typhosus* infections 8.3 days. In only six cases was a positive blood culture obtained more than ten days from the onset of the illness. The authors emphasize the importance of the blood culture during the first week. They found that a fortnight elapsed before agglutinins had formed in sufficient quantities to give a positive reaction between the serum of the patient and strains of the paratyphoid germs. The disadvantage of doing a blood culture on a patient who did not prove to be a paratyphoid patient was regarded as small as compared with the danger of leaving a paratyphoid patient labelled F.U.O. or influenza to act as a focus of infection to all around.

Reliable histories as to previous inoculation were obtained from fourteen of the patients from whom the *Bacillus typhosus* was isolated. Of these, five had been inoculated and nine not inoculated. Out of 126 cases, from whom paratyphoid organisms were separated by blood culture, 109 had been inoculated against typhoid fever, while seventeen had not been inoculated. None had been inoculated against paratyphoid strains. These figures and those for the number of times the *B. typhosus* was isolated demonstrated the efficacy of antityphoid inoculation against typhoid fever, but they also showed that antityphoid inoculation produced no protection against paratyphoid infection. A chart showed the relative proportions of the main types of enterica from August to January at M. There were 50 cases of typhoid disease in August, 27 in September, and 10 in October. A few cases occurred each month until January. There were 34 cases of paratyphoid B infection in August, 60 in September, 90 in October, 46 in November, 20 in December and 10 in January. There were less than ten cases a month of paratyphoid A infection each month until November, when there were 38 cases. In December there were 76 cases, and in January 80 cases.

Some notes from the Cape H. Laboratory, by Lieutenant W. Campbell, indicated in a general way the results obtained on the Peninsula. The water supply was frequently subjected to bacteriological examination. Chemical examination was not possible, and reliance had to be placed on bacteriological examination of the water and inspection of the source of the water and of the immediate neighbourhood of the wells. As the water was always contaminated with the excreta of horses and mules, and as it was obtained by the drainage of areas into which latrines had been dug for two months, only in one case were coliform organisms found absent from ten cubic centimetres of unchlorinated water. The presence of streptococci negatived the use of a water for potable purposes. The "total count" by means of gelatine and agar plates was so high that it could not be used for deciding between suitable and unsuitable waters. It served to test the efficacy of chlorination. While chlorination with one part per million of available chlorine was at times carried out, the best results were obtained with chlorination at four parts per million of water. The water had an unpleasant taste after this amount had been used. Only four samples of chlorinated water gave bad laboratory tests, and in these cases, the hypochlorite was defective in containing insufficient available chlorine. The experience at H. showed there was no question of the value of chlorinating doubtful or bad water supplies.

It was no exaggeration to say that Cape H. would ever be associated in the minds of those who were there with the "red flux" of dysentery. Whether or not amœbic dysentery was endemic at Cape H. before the landing of the troops is not known. Even if it were, it was quite clear that the source of infection must have been augmented by "amœbic carriers" among the troops who came from E., where amœbic dysentery was endemic. Whatever might have been the original focus of infection, troops coming from England direct to Cape H. developed amœbic dysentery. Bacillary dysentery was rare at Cape H. The cases that did occur were sporadic, having no relation to each other, either in time or in locality. The Shiga germ was isolated four times, and the Flexner germ once. Flagellate diarrhœa occurred to some extent. *Cercomonas hominis* and *Trichomonas hominis* were the flagellates more commonly found. *Lamblia intestinalis* was identified in one case. These cases were treated by the exhibition of potassium permanganate in solution, and by the administration of rectal injections of quinine solution (1 in 5,000).

Diphtheria was not infrequently met with. The open-air life rendered it of mild type. The disease was spread by "carriers." Two were identified and isolated, with a diminished incidence of the disease among the troops of the regiment from which the "carriers" came. While ordinary septic throats and diphtheria were the common pharyngeal affections, numerous cases of tonsillitis and pharyngitis occurred with the onset of cold, damp weather. Many of these were found due to pneumococcal infections.

The so-called Gallipoli sore was a variety of septic or trench sore common on the Peninsula. The lesions were primary or secondary. The primary lesions were traumatic ulcers, and the secondary were vesicles, which developed later into ulcers. The favourite sites for the primary lesions were the posterior aspects of the fingers and the dorsal metacarpal areas of the hands. The secondary lesions appeared on both surfaces of the forearms, though the upper arms and the lips were sometimes affected. In the majority of cases the primary indolent ulcers took from a fortnight to three months to heal. The only organism constantly present was a Gram-positive diplococcus, which could be found by culture as well as by direct examination of the exudate from a sore or vesicle. In the open ulcers many other organisms abounded. On culture, the diplococcus grew best on blood agar, forming small grey colonies with smooth margins. Most strains had no hæmolytic powers, though some possessed feeble hæmolytic characters. Dr. Campbell thought that, in view of these observations, the name of "streptococcal dermatitis" used by some authorities was unsuitable for this disease.

Medical Societies.

ANZAC MEDICAL ASSOCIATION.

At a meeting of the Anzac Medical Association, held "recently" at Cairo, the subjects of the group of diseases spoken of as "enterica" and of epidemic jaundice were discussed. Through the kindness and courtesy of Major Hugh R. G. Poate, the Honorary Secretary, we are enabled to publish some of the speakers' remarks.

Enterica.

Lieutenant-Colonel Walter Summons, M.D., D.P.H., 1st Australian General Hospital, Heliopolis, opened the discussion. He said:—

Patients suffering from long-continued fevers were being met with in the medical wards from August, 1915, onwards. The blood did not give positive Widal agglutination reaction to the typhoid bacillus, and yet the clinical picture was similar to that of an infection with this organism. Arrangements were then made with the Laboratory of the Institute of Hygiene, Cairo, for the examination of the blood from these febrile cases. The staff of the Laboratory had recently been augmented by the attaching of Captain Hutchens and Lieutenant Myat, two English bacteriologists, for the reporting of cases of infectious disease. All our patients were Australians, and one can assume that all had been inoculated twice with anti-typhoid vaccine within the twelve months prior to infection, and also that the patients had not been inoculated with paratyphoid vaccine.

For the blood tests five cubic centrimetres of blood were withdrawn into a syringe from a vein at the bend of the elbow as soon as the clinical picture was one of suspected enteric fever. The blood culture was only of value in the first ten days of the illness, except in the occasional case, when the organisms persisted, and in these the symptoms were severe. The results of the blood examinations (all performed at the Central Laboratory) are: Blood cultures—total performed 185; B. partyphosus A, 40 positive results; B. para-

typhosus B, 12 positive results; B. typhosus, 5 positive results; total, 57. Negative results were obtained in 128.

Agglutination tests—total performed 225; B. partyphosus A, 77 positive reactions; B. paratyphosus B, 18 positive reactions; B. paratyphosus A and B, 2 positive reactions; B. typhosus, 28 strong positive reactions; B. typhosus, 37 weak positive reactions; total, 162 positive reactions. Negative results were obtained in 63.

Not a few returns came back thus—weak agglutination with *b. typhosus*, and definite agglutination with *b. paratyphosus A* or *b. paratyphosus B*. These are counted as paratyphoid A or B respectively. In view of the rarity of the growth of typhoid bacilli in the blood cultures, it is evident that the agglutination test of *bacillus typhosus* is not an index of actual infection with this bacillus. The value of the agglutination test in previously-inoculated patients is open to discussion. Nevertheless, in this epidemic it seems a fair inference to assume that a positive reaction with *b. paratyphosus* A or B is diagnostic of the disease. After a universal prior inoculation, it will have to be regarded that the only proof of an enterica infection is the finding of the actual organism in the blood or in the excreta.

As the Hospital served the double purpose of being the hospital for the troops training in Egypt, as well as for receiving patients from the Mediterranean Force at Gallipoli, the further analysis of the positive results was made. Combining the blood cultures and the agglutination tests, the totals are:—

	M.E.F. Positive.	Garrison. Positive.
Paratyphoid A	81	34
Paratyphoid B	7	23

The proportion in the former case is 23 to 2, and in the latter 3 to 2 of paratyphoid A to paratyphoid B. These infections seem to be clinically identical. From observations of a single epidemic, it has not been possible to differentiate, except by means of the laboratory tests, the various infections.

The clinical aspect of the paratyphoid patient is different from that of the well-known typhoid picture. The patient does not look so ill, in spite of the fact that the temperature remains for weeks between 103° and 104°. The rash is decidedly more marked, and may be so distributed that at first glance one thinks of measles. The spots, however, are only on the trunk and limbs as far as the elbows and knees. The spots are pinkish, are not confluent, and vary in size, but usually are larger than the spots seen in typhoid. Again, the spots often appear late in the disease, during the third week and during defervescence.

Many of the cases developed while in hospital for surgical ailments, and thus the first signs could be observed. The mode of onset, in order of prevalence, was as follows:—

(*a*) Gradual, with severe headache, that persists for a week, and an increasing daily rise of temperature;
(*b*) With rigors and high temperature from the start, with little remission;
(*c*) With a prodromal rise of temperature for three to five days, after which the temperature returns to normal for one to four days, and then the fever runs its prolonged course;
(*d*) Simulating an acute appendicitis, with vomiting. Some ten or a dozen cases were operated on and the appendix removed. The inflammation of the appendix was found to be part of a general inflammatory condition of the intestines;
(*e*) With symptoms of acute gastro-enteritis;
(*f*) With signs and symptoms of pneumonia.

The course of the fever in many cases was prolonged, and though the patient progressed favourably, the fever continued until the sixth week. The type of fever was an irregularly intermittent one. Relapses were not uncommon, and were characterized by a repetition of the signs and symptoms, but milder in degree.

Headache at the onset was a distressing symptom, but this passed off in the first week, and, after passing through a lethargic stage of varying duration, the patient became bright, and had few troublesome symptoms. As a rule, the patients lost weight, but not to the extent that true typhoid patients do. From the rarity of serious complications and low mortality figures, one was inclined to allow more food. Distension of the bowels and indigested food in the stools readily yielded to treatment. The state of the bowels, apart from the occasional initial diarrhœa, was constipation, and was relieved by enemata. One of the early patients died of hæmorrhage, but this was before the nature of the fever had been recognized. Less than 1% of the cases were complicated by melæna. The enlargement of the spleen was an almost constant sign.

Of the sequelæ, the cardiac affections took a prominent place. The myocardial weakness, so common amongst the convalescent patients, demanded a prolonged convalescence. The pulse not infrequently did not become rapid until the patient had been allowed up. Less frequently a gross arrythmia was found and these cases did not improve till after a prolonged rest in bed. A few cases of polyneuritis were seen, but more cases of limited neuritis came to us amongst the convalescent patients transferred from other hospitals. Phlebitis, cholecystitis and nephritis were less common complications.

Few soldiers will have permanent damage the direct result of the infection, and out of the eight hundred cases passed through this Hospital, there have been only five deaths. This does not give a true idea of the mortality rate. Half of our convalescent patients had reached the convalescent stage, and not a few were in bed for other reasons when the bowel infection developed. Moreover, the most severe cases were not sent to Cairo from Anzac. On the other hand, there was no greater fatality rate amongst the cases that came from the garrison forces.

Of the two interesting aspects, source of infection and value of prophylaxis, one can only offer an opinion, and not speak with authority. The European and Egyptian predominating organism is *b. paratyphosus B*, while in the Gallipoli infection *b. paratyphosus A* has largely predominated. *B. paratyphosus A* is common in India, and it may be that the Indian troops brought this organism. It remains to be seen which bacillus is prevalent amongst the Turks. The value of prophylactic injections with antityphoid vaccine is upheld. A number of typhoid cases have occurred, and doubtless from the nature of the position at Anzac the percentage would have been much greater had not some opposing influence been present. The troops have now to a large extent been inoculated against *b. paratyphosus A* and *B*, and this, combined with the removal of carriers, should lessen the number of cases next season.

Colonel W. H. Parkes, C.M.G., D.D.M.S. of the New Zealand Forces, and Officer in Command of the New Zealand General Hospital, Cairo, gave an account of the enteric cases examined from November 1, 1915, to February 20, 1916.

Incidence.—Total number of cases examined, 170; causative organism isolated in 34%:

		Memorandum.
Due to typhoid bacilli	10%	.. (11%)
Due to paratyphoid A bacilli ..	73%	.. (44%)
Due to paratyphoid B bacilli ..	17%	.. (45%)

The typhoid figure is slightly below, the paratyphoid A much above, and the paratyphoid B much below the figures given in the Memorandum recently issued of results obtained in Laboratories of Cairo, Alexandria and Mudros.

Place of Origin.—

	Gallipoli.	Egypt.
Total Enterics..	89	.. 81
Of which there were due to typhoid bacilli..	5	.. 1
Paratyphoid A bacilli..	24	.. 18
Paratyphoid B bacilli..	1	.. 9

The cases classed as from Galilpoli include those in which the enteric developed shortly after the patients returned to Egypt, but the large number of cases direct from Gallipoli may account for many failure to isolate the causative organism, owing to the period of disease on examination. The majority of the typhoid fever cases were from Gallipoli, but nine out of ten of the paratyphoid B were local cases.

Inoculation.—Of the 170 patients with enteric, 54% had been inoculated with New Zealand vaccine only, 40% had been inoculated with New Zealand vaccine and re-inoculated with R.A.M.C. vaccine, and in 6% there was no record of any inoculation at all. Of the typhoid fever patients, 2 had been inoculated with New Zealand vaccine, 1 had received only the initial dose of New Zealand vaccine, 1

was a British soldier who had never been inoculated, and 2 had been inoculated with New Zealand vaccine and re-inoculated with R.A.M.C. vaccine. These figures indicate that, whatever may have been the protection afforded by the New Zealand vaccine, the R.A.M.C. vaccine gave no appreciably better result.

Mortality.—Of the 170 patients, 3 died—two from typhoid fever and one from a clinical type of typhoid fever, from which the causative organism was never isolated. The mortality from enteric was therefore under 2%.

The bacteriological examinations of the blood, fæces, and urine, and the agglutination tests, were carried out at the Central Laboratory, Cairo. The percentage of positive results is satisfactory, considering that so many of the men had been ill for some considerable time before admission, and also that 19 of them were convalescents examined for evidence of being carriers; all of the tests proved to be negative.

With regard to the Widal reactions, many were made without much information of diagnostic value being obtained. This I attribute to the method adopted of requiring a specimen of blood for agglutination tests at the same time as the blood culture, as early in the disease as possible, and attempting to draw conclusions from the one examination as to the nature of the infection. Such a system was bound to give unsatisfactory and misleading results, particularly in patients inoculated against typhoid fever, firstly, because agglutinatinins are usually only formed in the second and third week of the disease, and, secondly, because results of real diagnostic value could be obtained only by several tests made at intervals of about a week. This material is necessary for working out the curve showing the alteration in agglutinating power of the patient's blood.

I have here such a curve, worked out on one of our cases. It shows that, on the second day of the illness, when a blood culture revealed paratyphoid A bacilli, the patient's serum agglutinated typhoid bacilli in a dilution of 1 in 500, but failed to agglutinate paratyphoid A or B bacilli in any dilutions. On the ninth day the serum agglutinated typhoid bacilli in a dilution of 1 in 1,000, but was still quite negative to both forms of paratyphoid bacilli. By the twenty-first day, however, the patient's serum agglutinated both typhoid and paratyphoid A bacilli in a dilution of 1 in 125, and was still negative to the *bacillus paratyphosus B*. The obvious conclusion was that the patient developed an immunity to the infecting organism, *viz.*, *bacillus paratyphosus A*. Had any opinion been given on the tests of the second and ninth days, it would have been quite misleading. The patient developed symptoms just after arrival in Egypt from Gallipoli.

Owing, no doubt, to the system adopted, the agglutination tests on our cases disagreed with the results of the cultural tests in 50% of the cases. They are, of course, no longer being carried out.

Invaliding to New Zealand of Enteric Patients.—If it were definitely stated on what evidence a diagnosis of enteric should be based, the doubt as to whether cases were being invalided unnecessarily could be removed. It is assumed that the object of returning enteric patients to their respective countries is to minimize the danger of infection by carriers. Whether a convalescent from enteric is a carrier depends upon the report of the bacteriologist after examinations of his excreta, and the question arises as to whether the rule of invaliding the convalescents applies to patients whose blood had given negative results on culture, and the examinations of whose urine and fæces was also negative. The principle adopted now with New Zealand troops is that the latter class of case is returned to duty, and only carriers are invalided.

Epidemic Jaundice.

Lieutenant-Colonel J. O. G. Ledingham, R.A.M.C., made the following remarks:—

I regret that I am unable to make any material contribution to the bacteriological side of this question, in which I am more particularly interested, but perhaps you will allow me, as one who has only recently been introduced to these cases, to state certain points on which information is desired, and to indicate some lines on which clinical, epidemiological and bacteriological investigation should proceed. From the clinical and epidemiological evidence already available, there appears to be little doubt that we have here to deal with a specific form of epidemic jaundice, due to a specific and as yet unknown virus; but, at the same time, it is most important that we should have the fullest knowledge (clinical, epidemiological and bacteriological) of the antecedent histories of these cases, owing to the simultaneous prevalence of dysenteric and typhoidal infections. These other infections undoubtedly complicate the issues, both from the clinical and bacteriological standpoints. To take the dysentery complication first. We are informed that a large number of the patients have suffered from dysentery, either recently or remotely, and in most wars it has to be borne in mind that a dysentery and jaundice have been simultaneously epidemic. On the other hand, jaundice is a very rare complication of dysentery in time of peace. At the King George Hospital, in London, we had a few late cases of jaundice in returned convalescents from this area, and, ignorant as we were of the conditions out here, we were at a loss to account for the occurrence of the jaundice. In some of these cases the serum agglutinated *b. Shiga*, and we thought that perhaps the jaundice might be a late sequelæ of dysentery. We had noted also that jaundice had been reported as a complication of dysentery by medical men on the enemy's side, but I take it that they, like ourselves, had been rather befogged by this simultaneous prevalence of intestinal infection and their possible relation to jaundice. In cases of typhoidal disease, jaundice is also a very uncommon complication, except as an occasional accompaniment of acute cholecystitis. I have heard, however, that paratyphoid-like organisms have been recovered from the blood in some cases of jaundice. If that be the case, the matter is one of great importance, but one would wish to know in what particulars these organisms differ from the two well-known types, and, on the clinical side, one would like to have the most exact information with regard to the clinical course of these cases. It is probable that, in many cases, the onset of jaundice may have masked the diagnosis of paratyphoid fever. For example, I am indebted to Captains Hallinan and Roaf, of the Citadel Hospital, for a culture of *b. paratyphosus A*, isolated from the blood of a patient with jaundice. The case had been admitted with dysentery. Jaundice ensued, with sudden rise of temperature to 104°, and the latter did not reach normal until the twelfth day. The clinical course, in fact, was one suggesting essentially paratyphoid fever. The jaundice occurred here at the commencement of the pyrexia, and I suggest that, in a case of this kind, there has been a mixed infection by the paratyphoid organisms and by the specific jaundice virus, both of which probably have gained entrance to the system simultaneously, owing to the ulcerated or inflamed condition of the bowels. In ten cases of jaundice, which, through the kindness of Major Rickett, of Nasrieh Hospital, I had the opportunity of examining, I tested the sera against various organisms, and only in one case the serum agglutinated *b. paratyphosus A*. The result, I think, simply indicated that, in this particular case, paratyphoid fever had preceded the onset of the epidemic jaundice. With regard to the nature of the specific virus of the form of jaundice, we have little definite information. Major Martin has given us the results of certain interesting observations made by him in Mudros, and, though of a negative character, they are of great value. Much more work on this side of the question is desired, and every attempt should be made to coördinate all investigations into this subject.

The proteus group (*b. proteus fluorescens* and *b. pyocyaneus*, etc.) have been incriminated as possible causative agents, but it has to be remembered that members of this group are frequently found in stools in association with *b. dysenteriae*, *vibrio cholerae*, etc., and it is not established that they can themselves initiate an infection accompanied by jaundice. Ten years ago I isolated a peculiar organism of this group from two cases of spontaneously-occurring toxæmic jaundice in guinea-pigs. There was jaundice with necrotic foci in liver. I was unable to reproduce the disease in other animals by means of pure cultures.

In view of the negative results so far obtained in these cases of jaundice, one might suggest that the actual virus belongs to the filter-passing group, and that proteus-like organisms are associated with it, much in the same way as *b. suipestifer* is associated with the specific virus of hog cholera. There is just one other point I might mention in connexion with the epidemiology. I have noticed that in one

of the small outbreaks of epidemic jaundice occurring in Great Britain (Cockayne, *Lancet*, Vol. 2, 1914, p. 218) abortive cases, without jaundice, have occurred, and that these patients have been observed to communicate the typical disease, with jaundice, to other persons with whom they later came in contact. Recovered patients have also been observed to transfer infection to a distance. It would seem that, in this disease also, the carrier may play an important part.

Major Llewellyn Phillips, R.A.M.C., British Red Cross Hospital, Giza, said:—

I have been in practice in Cairo for nearly 15 years, and during that period I have had considerable experience of jaundice, having been a victim myself to a very severe attack of the catarrhal form. During this period, practically all the cases of jaundice (apart from biliary obstruction due to gall-stones, or in the terminal stage of cirrhosis) have been of the catarrhal type. Previous to the cases among soldiers in Hospital, I had only seen one case of that extremely rare complication of typhoid fever, jaundice, which appeared in a private patient during the first week of convalescence from enteric fever. I had also seen two cases of acute yellow atrophy of the liver. The *icterus gravis* of Alexandria I had never seen until this last autumn, when I saw a private case in consultation in a boy who had come from Alexandria. He had fever up to 40° C.; he was passing urine exactly like the urine of blackwater fever (hæmoglobinuria); the next day his temperature was about 39°, and he was jaundiced; there was also vomiting. Under treatment, in a few days the urine cleared up; then the fever left him, and finally the jaundice disappeared. His heart, however, was affected for two or three months after, there being tachycardia and dyspnœa on exertion. At the height of the disease it looked as though a fatal termination would result. Such is my experience among civilians in Cairo.

As regards jaundice among the troops, we have had 362 cases admitted as such, and at least 19 men developed it in the British Red Cross Hospital. At times, the jaundice developed as a complication of other diseases, or came on after operations had been performed. These cases, though severe, did not present dangerous symptoms, save in one case, which I will detail later. The symptoms were usually the same, and included epigastric pains and sometimes vomiting. The temperature was not characteristic, being either normal or showing slight irregularities. The illness ran a normal course, though convalescence was a little slow. Tyrosin appeared in the urine in one case of jaundice following an operation for varicocele.

A certain number of cases complicated the "enterica" group of fevers, the sequence being either jaundice, enteric or the reverse, the actual figures being:—

	Cases.
Jaundice followed by paratyphoid A	4
Paratyphoid B	1
Enterica	5
Paratyphoid B followed by jaundice	1
Enterica followed by jaundice	1

Other cases of jaundice developed in Hospital in connexion with dysentery, the exact figures in Hospital being 10 cases admitted for dysentery developed jaundice and two cases of jaundice developed dysentery, and in many other cases a history of dysentery or diarrhœa was obtainable. This may have been a mere coincidence, considering the extreme prevalence of dysentery on the Peninsula. Most of our patients came direct from Gallipoli, and a certain number came from Wardan, but it must be remembered that there were men from the 53rd Division, who probably contracted it on the Peninsula. In most respects the cases were of the type of severe catarrhal jaundice.

One case developed symptoms which pointed to acute yellow atrophy. The patient was a private, aged 25 years, from the 87th Field Artillery of the 29th Division, and was admitted on October 10th with the tentative diagnosis of influenza. He had reported "sick" ten days before, with fever, headache, pains in the legs and diarrhœa. On admission, his conjunctivæ were slightly jaundiced. His temperature during the first few days after admission ranged between 37.2° and 38.3° C. (99° and 101° F.). On the 12th it was noted that marked icterus had developed and the urine was mahogany-coloured and contained large quantities of tyrosin and some leucin. He had epigastric pains, and I was asked to see him, as he seemed very ill. He had vomited, and was having fainting attacks. His liver dulness appeared to be slightly diminished. He was given glucose and injections of sodium bicarbonate. He vomited during the day. The next day (15th) he was much the same. He had vomited during the night, but the vomit was free of blood, though there was a streak of blood in the motions; the tongue was clean. On the 16th he was much worse, being now delirious and struggling, having to be restrained and watched continuously; he had incontinence of urine. The liver dulness had decreased below the sixth intercostal space. There were, however, no petechiæ on the skin. His pulse kept fairly good, and the rate ranged from 60 to 84. At this stage Colonel Hunter saw him, having come up from Alexandria in response to a letter from me about him. He concurred with the diagnosis of possible acute yellow atrophy, and thought that the worst was passed, and that he would get well. He was right. The next day (17th) he was better, and recovered consciousness. The pulse was stronger and the liver dulness had increased, being definitely in the sixth space. Improvement continued, and by the 21st the liver was up to fifth rib, and after that convalescence was uninterrupted. Unfortunately, Dr. Longridge, under whose care he was, has returned to England, and so could not be present to-day to give further details. The treatment adopted was abundant sodium bicarbonate by mouth, as long as he could swallow, and by hypodermic injections of a sterile 3% solution and the administration of glucose *per rectum* in a 10% solution. To this was added later, at Colonel Hunter's suggestion, sodium bicarbonate and beef tea, and on convalescence he was encouraged to eat preserved fruits. Similar treatment was adopted in the private case of *icterus gravis*.

A similar case was seen by me in a soldier at Kasr-el-Ainy Hospital the last week in December, but at a more advanced stage; the patient was vomiting blood, and was unconscious. Like treatment was adopted, but in this case the disease proved fatal, and at the post-mortem examination the left lobe of the liver was yellow and atrophied, and microscopically marked atrophy of the liver cells was present, thus confirming the diagnosis of acute yellow atrophy of the liver. Colonel Hunter saw this patient also with me.

As regards treatment, though it is not under discussion, it has been my practice in Cairo to employ rest in bed for catarrhal jaundice. A saline, such as Carlsbad salts or water, is given every morning; Vichy water *ad lib.* to drink, and a mixture containing sodium bicarbonate, sodium salicylate and often sodium sulphate. I do not employ the calomel treatment. Some patients suffering from jaundice have come into the Red Cross Hospital with sore gums from the administration of much calomel for its treatment.

My own opinion is that all cases of jaundice have not the same ætiology, different micro-organisms being concerned in different cases. Amongst them there are the bacilli of the "enterica" group and possibly the dysentery bacilli, but other bacilli also are probably causative agents. Much points to definite infection. Thus I have seen jaundice develope in an officer who had been billeted out, the previous occupant of the same room having also suffered from jaundice. Somewhat similar cases have occurred in Hospital amongst our patients. On the other hand, none of the members of our nursing staff or doctors have contracted jaundice at the Red Cross Hospital.

Major Prout, C.M.G. of the Military Infectious Diseases Hospital:—

Most of my professional work has been done in tropical zones, where the type of jaundice we are discussing to-day does not occur, and my experience of jaundice, apart from catarrhal jaundice, has been mainly associated with the malignant fevers, yellow fever and blackwater fever. The two latter may be regarded as purely toxæmic jaundice, and I think that, in addition to the method of production of jaundice described by Colonel Hunter, there is another factor, which is well exemplified in blackwater fever. In that disease there is an actual rapid hæmolysis, with a resulting hæmoglobinæmia, and the production of an intense form of jaundice. Now it seems to me that this factor should be remembered in the case of *icterus gravis* under discussion; there is a resemblance in the symptomatology,

and I suggest that a hæmolysin may be produced in the intestinal canal, with hæmolysis and resulting jaundice.

I observed that, in the address given by Professor Kartulis at Alexandria, he stated that the majority of the cases had stools "white, like milk." In my experience of toxæmic jaundice this is not the case, and it suggests to my mind the possibility that in the cases under review we may be dealing with different clinical entities.

To one who is familiar with insect-borne diseases, many of which are associated with jaundice, it occurs at once whether this form of epidemic jaundice may not be transmitted by mosquitoes or biting flies or other insects, and it would be interesting to know the conditions as regarding this point, both on the Peninsula and on the Canal.

Now, with reference to the question of relationship between this jaundice and the enterica group. It has been suggested, I understand, that these mild forms of epidemic jaundice may be nothing but a variety of enterica, although we know that jaundice is one of the rarest complications of typhoid fever. How is this borne out by figures?

In my Hospital, out of 1,231 admission, I have had 521 cases of the enterica group, some definitely paratyphoid A and B, bacteriologically proved. Others were clinically enteric fever. Now, all of these are transferred from other hospitals, at varying periods of the disease, and, consequently, the history was not always reliable. Among these were cases in which a history of jaundice previous to admission was given. This I exclude as not being reliable. But there were a number of cases in which the patients had jaundice on admission, or in which jaundice developed during their stay. Of such cases there were 20, giving a percentage of 3.7 of the total admission of entericas. A further analysis shows that, of these, eight were enteric fever, or 1.5%; 8 were paratyphoid A, or 1.5%; and 4 were paratyphoid B, or 0.75%.

These figures are perhaps slightly higher than the usual proportion of cases of jaundice occurring in typhoid fever, but they are, to my mind, certainly not sufficient to justify us in concluding that there is any causal relationship between enteric fever and epidemic jaundice.

Captain G. A. Auden, R.A.M.C., of the Nasrieh Military Hospital, Cairo, gave the following account of his experience.

In the six months from August to January (inclusive), the total number of admissions for jaundice was 332, of enterica was 189, and of dysenterica was 806. The total number of admissions for sickness during the same period was 3,760. Thus the jaundice admissions were 8.7% of the whole.

These admissions, when plotted as curves, showed no inter-relationship, and no correlation could be made between the prevalence of jaundice with those of the intestinal groups.

In this period there were ten cases of jaundice associated with enterica, and in seven of these there had been a previous history of diarrhœa of the dysenteric type.

Three orderlies had contracted the disease, one of whom was in the orderly room, and in no contact with patients. The greatest care was exercised to prevent transmission of infection by orderlies, and no orderly dealing with bed pans was allowed to deal with the patients' food. Complete overalls, with short sleeves, were worn by orderlies, and all bed pans and excreta were treated with cresol.

As regards incidence and association with cooler weather, as suggested by Colonel Hunter, the speaker pointed out that a large number of cases occurred in the European troops at Ismailia during June and July, when the temperature was above the average. Similarly as all excreta, horse litter and kitchen refuse was dealt with by complete incineration. These cases, some of which occurred while the patients were in Hospital for other ailments, could not be associated with defective sanitation.

The experience of the Nasrieh Hospital agreed with that of the medical officers at Suvla, in the exceedingly mild initial symptoms in the majority of cases, for quite a considerable number of men were first noticed to be jaundiced by their sergeant while still on duty. The stools had not the clay-like whiteness of ordinary catarrhal jaundice, and skin irritation or urticaria never occurred. The prolonged weakness and slow convalescence, and the tendency to myocardial weakness was very marked; vomiting was not a marked feature. Of complications, the speaker mentioned two cases of orchitis then under his care, and two cases of severe and persistent stomatitis, with salivation.

Naval and Military.

The 198th casualty list was issued on August 23, 1916, the 199th appeared on August 26th, and the 200th and 201st were issued simultaneously on August 28th. The total number of names in these lists is 3,782. It is a matter for congratulation that this long list only contains the name of one medical man—Captain F. Boothroyd, who is reported to be ill in hospital.

It has been announced in the daily press that Captain H. K. Ward, R.A.M.C., of Sydney, was wounded on August 20, 1916. Captain Ward was attached to the 2nd King's Royal Rifles. It appears that he has previously been wounded. Dr. Ward was a New South Wales Rhodes Scholar, and had been working at Oxford University up to the outbreak of war.

The news that Captain G. A. M. Heydon and Captain Fergus McIntyre have been awarded the Military Cross has been received in Sydney since we went to press last week. Captain Heydon was buried by a shell, but has now recovered from the effects of this event. No further information appears to have been imparted to his father, Mr. Justice Heydon, who received a cable on August 23, 1916, informing him of the fact. The Military Cross was awarded to Captain F. McIntyre for conspicuous bravery in tending the wounded under heavy artillery fire, which was directed to a first-aid post, among other places.

The following has appeared in the *Commonwealth of Australia Gazette*, No. 110, under date of August 24, 1916:—

Australian Military Forces.

Grant of Honorary Rank.

His Excellency the Governor-General, acting with the advice of the Federal Executive Council, has been pleased to approve of the undermentioned, who have served in the Australian Imperial Force as commissioned officers, being appointed to Australian Army Medical Corps Reserve, and granted honorary rank, equivalent to that held by them in the Australian Imperial Force, as follows:—

Officers who, on appointment for Active Service outside Australia, were not serving in the Australian Military Forces.

1st Military District.

To be Honorary Captain—

W. G. Brown, late Captain, Australian Imperial Force. Dated 28th January, 1915.

2nd Military District.

To be Honorary Major—

J. Morton, late Major, Australian Imperial Force. Dated 1st May, 1915.

To be Honorary Captain—

F. M. Farrar, late Captain, Australian Imperial Force. Dated 30th December, 1915.

3rd Military District.

To be Honorary Captains—

H. E. A. Jackson, late Captain, Australian Imperial Force. Dated 20th August, 1914.

C. R. Lease, late Captain, Australian Imperial Force. Dated 13th December, 1915.

C. H. Molloy, late Captain, Australian Imperial Force. Dated 1st April, 1916.

4th Military District.

To be Honorary Captain—

W. M. Sinclair, late Captain, Australian Imperial Force. Dated 12th June, 1915.

5th Military District.

To be Honorary Major—

W. Trethowan, late Major, Australian Imperial Force. Dated 1st May, 1915.

To be Honorary Captains—

S. J. Cantor, late Captain, Australian Imperial Force. Dated 1st May, 1915.

V. H. Gordon, late Captain, Australian Imperial Force. Dated 22nd November, 1915.

His Excellency the Governor-General, acting with the advice of the Federal Executive Council, has been pleased to approve of the undermentioned officers, who have served in the Australian Imperial Force as commissioned officers, having the rank held by them in the Australian Imperial Force confirmed as honorary rank in the Australian Military Forces, as follows:—

Officers, who, on appointment for service outside Australia, were serving, and are now serving, in the Australian Military Forces.

2nd Military District.

To be Honorary Major—

Captain G. Read, Australian Army Medical Corps Reserve. Dated 25th June, 1915.

3rd Military District.

To be Honorary Lieutenant-Colonel—

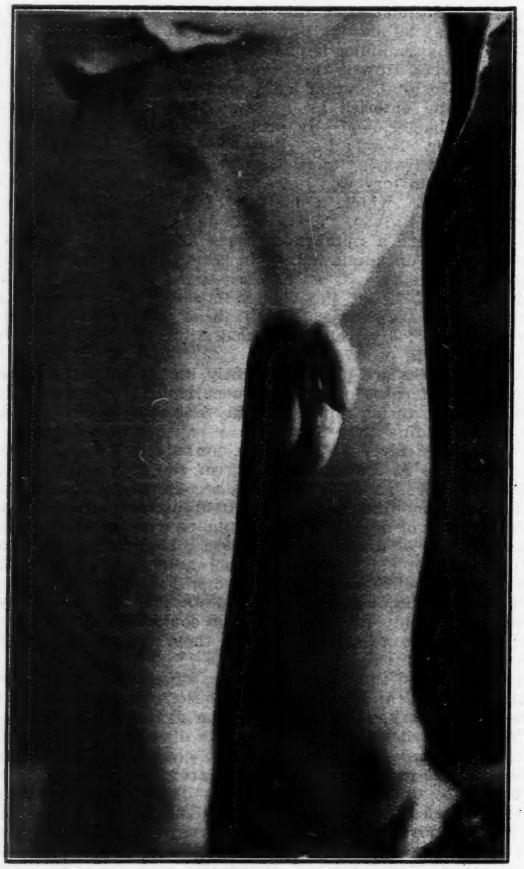
Honorary Major W. P. Norris, Australian Army Medical Corps Reserve. Dated 1st December, 1915.

Honorary Captain R. Stawell, Australian Army Medical Corps Reserve. Dated 1st May, 1915.

THE TREATMENT OF VARICOCELE.

In November last year the members of the New South Wales Branch of the British Medical Association listened with interest and advantage to an address by Dr. John

Flynn on varicocele (see *The Medical Journal of Australia*, December 18, 1915, pp. 573-578, pp. 583-584, and pp. 589-590). The facts of the case, as put forward on that occasion, are quite clear. Before examining the expediency of performing an operation for this condition, the author showed that the causes alleged in the past were but anatomical conditions common to all healthy men, and were not reserved to the bearers of a circocele. These alleged causes include the great length and tortuosity of the pampiniform plexus, the dependent position and lack of support of the testes, the feeble *vis-a-tergo* with which the blood circulates through these organs, the constant pressure on the vessels due to the contraction of the abdominal muscles and the loaded condition of the sigmoid flexure retarding the blood from the left spermatic vein. He also showed how unsatisfactory was the explanation given for the fact that varicocele is more common on the left than on the right side. A careful consideration of all the relevant facts has forced physiologists to the conclusion that the rapid developmental changes which take place in the entire sexual



apparatus at puberty, supervening on veins with an excessive persistence of the fœtal condition, lead to a dilatation, elongation and sacculation of the veins of the pampiniform plexus, in other words, to varicocele. Thus, on theoretical grounds, it was demonstrated that, save in very exceptional circumstances, an operation for varicocele was unjustifiable. The experimental evidence of Bouin and Ancel, that damage to the spermatic nerves in the cord may lead to atrophy of the cells of Leydig, suggests that an operation undertaken in a young subject may injure these cells, which preside over the acquirement of secondary masculine characteristic. The physiological effect of this damage may not be apparent when the other organ is intact, but the safeguarding influence of the duplication of important organs should be borne in mind.

We are now in the possession of a striking pictorial confirmation of the views expressed. It is regrettable that these pictures were not available at the time. The pictures we reproduce are of a boy in the public service. He is 14

years of age. A varicocele, as can be seen with singular clearness, existed, and was discovered accidentally at a medical examination. The boy was informed, despite the fact that no symptoms were present, that he would have to undergo an operation for the cure of his disability. He was given three months to comply. At the end of this period the boy and his parents had revealed greater sound sense than the medical advisers of his employers, and the operation had not been undertaken. A letter was consequently addressed to the boy, informing him that, as he had failed to comply with the instruction to have his physical defect remedied, his services would no longer be required. And, as the result of official super-knowledge, an individual who bears a developmental defect in the form of a fœtal condition of a plexus of veins, notwithstanding the fact that this defect was neither causing him inconvenience nor endangering his well-being, was dismissed the services for refusing to submit to an operation which could not have cured the defect and which, in all probability, would have caused symptoms of a very definite nature.

Medical Matters in Parliament.

NEW SOUTH WALES.

The Vegetable Creek Hospital Bill, which contains provisions similar to those of the Newcastle Hospital Bill, the Wallsend Mining District Hospital Bill and the Illawarra Cottage Hospital Bill, passed through the Committee stage in the Legislative Council on August 16 and through the third reading on August 17, and was read the first time in the Assembly on August 17, 1916. The Bill was read a second time on August 22, 1916, and passed through the Committee stage without amendment.

On August 16 a motion to the following effect, by Dr. Arthur, was agreed to:—

> That the Select Committee now sitting on the prevalence of venereal diseases have leave to make visits of inspection from time to time within the State for the purpose of holding enquiries and taking evidence, and that the Committee have leave to sit during any adjournment of the House for the purpose of making such visits of inspection.

VICTORIA.

On August 23, 1916, Mr. D. McLeod, Minister of Health, moved in the Legislative Assembly for leave to introduce a Bill relating to venereal diseases and to amend Part V. of the Police Offences Act. The motion was agreed to, and the Bill brought in and read for the first time.

SOUTH AUSTRALIA.

The Chief Secretary re-introduced into the Legislative Council, on August 8, 1916, the Health Act Further Amendment Bill, which he stated was rendered necessary by a decision of the Full Court in the case of G. Laughton & Coombes, Limited, *v.* Master Butchers, Limited. The action was brought to recover the price of pigs bought at auction, both the seller and the buyer at the time of the sale being unaware that the animals were suffering from disease. Mr. Justice Murray held that Sections 106 and 111 of the Health Act did not prohibit the sale of diseased animals. It was at times impossible to detect disease during the life of the animal; the loss of a condemned animal could be divided between the butchers and the stock salesmen. The first six clauses had been considered in Committee during the last session of Parliament, and the Council determined to restore the Bill to the notice paper.

On August 8, 1916, Mr. Thomas Ryan stated in the Assembly that his previous remarks in regard to charges being made at the Adelaide Hospital and at the Adelaide Children's Hospital to poor people should be confined to the Adelaide Hospital only. He had been informed that when a parent brought a patient to the Children's Hospital no fees were charged if that person was unable to pay, nor were fees claimed from the municipality from which the patient came.

QUEENSLAND.

At the opening of the Queensland Parliament on August 22, 1916, His Excellency the Governor, in the course of his speech, intimated that a Health Act Amendment Bill and a Medical and Other Practitioners' Bill would be submitted, among other measures, to the two legislative bodies for consideration.

University Intelligence.

THE UNIVERSITY OF SYDNEY.

A monthly meeting of the Senate of the University of Sydney was held on August 15, 1916, at the University.

The following degrees were conferred: *In absentia*—M.A., C. H. Northcott, Ch.M., B. McN. Beith; Bachelor of Medicine, B. B. Blomfield, Ch.M., L. G. Teece. In Person—Bachelor of Medicine, J. J. C. Lamrock, Ch.M., R. J. Silverton.

Letters from the Department of Public Instruction were received, notifying (*i.*) that the Executive Council had accepted the resignation of the Honourable E. J. Kavanagh of his office of Fellow, and (*ii.*) that Mrs. Katherine Winifred Dwyer had been appointed a Fellow of the Senate.

On the recommendation of the Professor of Law, it was resolved that the professors and lecturers in Law be appointed examiners for the LL.D. Examination.

An application from Dr. C. B. Blackburn, Lecturer in Clinical Medicine, for leave of absence in consequence of his having undertaken military service was granted.

A letter was received from Messrs. Harold T. Morgan & Morgan, forwarding the amount of £1,000 from the estate of the late Mary Jane Coulson, as a legacy for the endowment of a scholarship to be called the "Thomas Henry Coulson Scholarship.' It was resolved that the bequest be gratefully received.

It is with great regret that we have to record the death from injuries received in a motor-car accident of Dr. George Owen Rigby, of Kyneton, Victoria. Dr. Rigby and three others were riding in a car from Gisborne to Kyneton on August 26, 1916, when the car skidded and overturned. The doctor and one of his companions were pinned underneath. When released, it was found that the former was dead. His companion escaped with a crushed leg.

Dr. Henry Absolam Ridler has been nominated for membership of the New South Wales Branch of the British Medical Association.

Correspondence.

A SPONTANEOUS CHOLECYSTOSTOMY.

Sir,—The following may prove of interest. An old man, æt. 81, came to me about three months ago. He had a soft tumour on costal margin, about mid-way between epigastrium and axilla. He discovered it by accident. It felt like a lipoma, and the skin moved freely over it. There was no tenderness or redness. I advised him to leave it alone, as it was causing no trouble and his age was so advanced.

A week ago he came back and told me it had "bust" and discharged stones. He produced two facetted gall-stones in a match-box, and said he had thrown eight others away. A probe passed in the sinus went about two inches, and at least two other stones could be felt. There was no discharge of bile. He had apparently performed on himself a spontaneous cholecystostomy.

Yours, etc.,

M. KASNER MOSS.

Perth, August 17, 1916.

Medical Appointments.

Dr. John Thomson has been appointed Officer of Health for Williamstown, Victoria, during the absence of Dr. H. R. Maclean on active service.

Dr. J. P. Black has been appointed Officer of Health for the Borough of Horsham, Victoria, in place of Dr. S. D. Read (resigned).

Dr. J. B. Backhouse has been appointed Officer of Health for the Avon Shire, Victoria, in place of Dr. G. H. Wickens (resigned).

Dr. T. A. Wilson has been appointed Officer of Health for the Creswick Shire, Victoria, in place of Dr. W. P. H. Parker (resigned).

Dr. Sydney George has been appointed Government Medical Officer at Braidwood, New South Wales, in the place of Dr. H. B. Beatty (resigned).

Dr. John Henry Raymond McCutcheon has been appointed Junior House Surgeon at the Hobart General Hospital, in place of Dr. G. J. Walker (resigned).

Dr. Harold Whitfield has been appointed Junior Resident Medical Officer at the Perth Public Hospital, Western Australia.

Dr. Donald Rupert Charles Tregonning has been appointed Junior Resident Medical Officer at the Perth Public Hospital, Western Australia.

Dr. Stanley Earles Craig has been appointed Junior Resident Medical Officer of the Perth Public Hospital, Western Australia.

Dr. Colin Hasler Martin has been appointed Junior Resident Medical Officer at the Perth Public Hospital, Western Australia.

Dr. G. T. Howard has been appointed Official Visitor to the Lunacy Department, Victoria, the position rendered vacant by the death of Dr. Jamieson.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xxi.

Thursday Island Hospital, Medical Officer.

University of Melbourne, Lectureship in Histology and Human Embryology.

Medical Appointments.

IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
QUEENSLAND. (Hon. Sec., B.M.A. Building, Adelaide Street, Brisbane.)	Brisbane United F.S. Institute.
WESTERN AUSTRALIA. (Hon. Sec., 230 St. George's Terrace, Perth.)	Swan District Medical Officer. All Contract Practice Appointments in Western Australia.
SOUTH AUSTRALIA. (Hon. Sec., 3 North Terrace, Adelaide.)	The F.S. Medical Assoc., Incorp., Adelaide.
NEW SOUTH WALES. (Hon. Sec., 30-34 Elizabeth Street, Sydney.)	Department of Public Instruction—New Appointments as Medical Officer, Ophthalmic Surgeon, Ear, Nose and Throat Surgeon, Physician. Australian Natives' Association. Balmain United F.S. Dispensary. Canterbury United F.S. Dispensary. Leichhardt and Petersham Dispensary. M.U. Oddfellows' Med. Inst., Elizabeth Street, Sydney. Marrickville United F.S. Dispensary. N.S.W. Ambulance Association and Transport Brigade. North Sydney United F.S. People's Prudential Benefit Society. Phœnix Mutual Provident Society. F.S. Lodges at Casino. F.S. Lodges at Lithgow. F.S. Lodges at Orange. F.S. Lodges at Parramatta, Penrith, Auburn, and Lidcombe. Newcastle Collieries — Killingworth, Seaham Nos. 1 and 2, West Wallsend.
VICTORIA. (Hon. Sec., Medical Society Hall, East Melbourne.)	Brunswick Medical Institute. Bendigo Medical Institute. Prahran United F.S. Dispensary. Australian Prudential Association Proprietary, Limited. National Provident Association. Life Insurance Company of Australia, Limited. Mutual National Provident Club.
NEW ZEALAND: WELLINGTON DIVISION. (Hon. Sec., Wellington.)	F.S. Lodges, Wellington, N.Z.

Diary for the Month.

Sept. 6.—Cent. South. Med. Assoc. (N.S.W.).
Sept. 6.—Vic. Branch, B.M.A., Branch.
Sept. 8.—N.S.W. Branch, B.M.A., Clinical Evening.
Sept. 8.—S. Aust. Branch, B.M.A., Council.
Sept. 12.—Tas. Branch, B.M.A., Branch and Council.
Sept. 12.—N.S.W. Branch, B.M.A., Ethics Committee.
Sept. 13.—South Sydney Med. Assoc. (N.S.W.).
Sept. 14.—Vic. Branch, B.M.A., Council.
Sept. 15.—N.S.W. Branch, B.M.A., Last Day for Nomination of Two Candidates for Election of Federal Committee.
Sept. 15.—N.S.W. Branch, B.M.A., Extraordinary General Meeting.
Sept. 19.—N.S.W. Branch, B.M.A., Executive and Finance Committee.
Sept. 20.—W. Aust. Branch, B.M.A., General.
Sept. 22.—Q. Branch, B.M.A., Council.
Sept. 26.—N.S.W. Branch, B.M.A., Medical Politics Committee, Organization and Science Committee.
Sept. 27.—Vic. Branch, B.M.A., Council.
Sept. 28.—S. Aust. Branch, B.M.A., Branch.

EDITORIAL NOTICES.

Manuscripts forwarded to the office of this Journal cannot under any circumstances be returned.

Original articles forwarded for publication are understood to be offered to *The Medical Journal of Australia* alone, unless the contrary be stated.

All communications should be addressed to "The Editor," *The Medical Journal of Australia*, B.M.A. Building, 30-34 Elizabeth Street, Sydney, New South Wales.